



Dan Raviv Associates, Inc.

Consultants in hydrogeology, water quality, landfill hydrology and ECRA compliance

**VOLUME I OF V
TEXT, FIGURES AND TABLES**

REMEDIAL INVESTIGATION (RI) REPORT

**HATCO CORPORATION
FORDS, NEW JERSEY**

DRAI JOB NO. 86C289

prepared for:

**Hatco Corporation
1020 King George Post Road
Fords, New Jersey 08863**

Attention: Mr. George Chryss, Executive, VP

prepared by:

**Dan Raviv Associates, Inc.
57 East Willow Street
Millburn, New Jersey 07041**

May 1993

DR 833601





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<u>Volume IV</u>	
A	Boring Logs
B	Results of Project 50 PCB Sampling in AEC 9A (Figure 1, March 1991 in Appendix M of Draft RI WP)
C	Monitoring Well Logs and Monitoring Well Certification Forms A and B
D	"Summary of RI/FS Scoping Investigation Results at Hatco Corporation - April 14 through May 15, 1992", Dan Raviv Associates, Inc.
<u>Volume V</u>	
E	"Interim Remedial Measures Investigation for the Hydrotherm Building/Ester I Tank Farm and Vicinity with Recommendations for Action - July through October, 1992", Dan Raviv Associates, Inc.
F	"Sanitary Sewer Internal Inspection Report", Elson T. Killam Associates, Inc.
G	NJDEPE January 20, 1993 Soil Cleanup Criteria and NJDEPE Ground Water Quality Standards Adopted on February 1, 1993

LIST OF ATTACHMENTS

<u>Attachment No.</u>	<u>Title</u>
I (5 binders)	Soil Laboratory Data Sheets - August through September, 1992
II (1 binder)	Ground Water Laboratory Data Sheets - April 28 and October 19 & 20, 1992
III (1 binder)	Surface Water Laboratory Data Sheets - October 28, 1992

Table 2.0-1
Soil and Sediment Sampling Locations and Analytical Parameters
Hatch Corporation - Fords, New Jersey

Region IV		RI Sample/Grid Location(6-9/02)	Depth to Water (feet)	Sample Depth (feet, below grade)							
				0.0 - 0.5	1.5 - 2.0	4	6	8	10	12	14
C 7A - PA Residue Area Post-Excavation		R22	12	--	B,M	B	--	B,M	--	--	--
		Sample/Grid Location(12/87-7/02)	Depth to Water (feet)	Sample Depth (feet, below grade)							
				0 - 1	1 - 2	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12	12 - 14
		MW155(P/O26.25)	12	--	P,B	--	--	--	--	--	P,B
		B-1	12	--	--	--	--	--	B	--	--
		B-2	12	--	--	--	--	--	B	--	--
		B-3	12	--	--	--	--	--	B	--	--
		B-4	12	--	--	--	--	--	B	--	--
		B-5	12	--	--	--	--	--	B	--	--
		B-6	12	--	--	--	--	--	B	--	--
		B-7	12	--	--	--	--	--	B	--	--
		B-8	12	--	--	--	--	--	B	--	--
		B-9	12	--	--	--	--	--	B	--	--
		B-10	12	--	--	--	--	--	B	--	--
		B-11	12	--	--	--	--	--	B	--	--
		B-12	12	--	--	--	--	--	B	--	--
		B-13	12	--	--	--	B	--	--	--	--
		B-14	12	--	--	--	B	--	--	--	--
		B-15	12	--	--	--	B	--	--	--	--
		B-16	12	--	--	--	B	--	--	--	--
		B-17	12	--	--	--	B	--	--	--	--
		B-18	12	--	--	--	B	--	--	--	--
		S-1	12	--	--	--	--	--	P,B *	--	--
		S-2	12	--	--	--	--	--	P,B	--	--
		S-3	12	--	--	--	--	--	P,B	--	--
		S-4	12	--	--	--	--	--	P,B *	--	--
		S-5	12	--	--	--	--	--	P,B	--	--
		S-6	12	--	--	--	--	--	P,B	--	--
		S-7	12	--	--	--	--	--	P,B	--	--
		S-8	12	--	--	--	--	--	P,B *	--	--
		S-9	12	--	--	--	--	--	P,B	--	--
		S-10	12	--	--	--	--	--	P,B *	--	--
		S-11	12	--	--	--	--	--	P,B	--	--
		S-12	12	--	--	--	--	--	P,B	--	--
		S-13	12	--	--	--	--	--	P,B	--	--
		S-14	12	--	--	--	--	--	P,B	--	--
		S-15	12	--	--	--	--	--	P,B	--	--
		S-16	12	--	--	--	P,B	--	--	--	--
		S-17	12	--	--	--	P,B	--	--	--	--
		S-18	12	--	--	--	P,B	--	--	--	--
		S-19	12	--	--	--	P,B *	--	--	--	--
		S-20	12	--	--	--	P,B	--	--	--	--
		S-21	12	--	--	--	P,B	--	--	--	--
		Sample/Grid Location(12/87-9/88)	Depth to Water (feet)	Sample Depth (feet, below grade)							
				0 - 1	1 - 2	2-4	4-6	6-8	8-10	10-12	12-14
AEC 7A - PA Residue Area Pre-Excavation		O24	12	P,B,PHC	--	--	--	--	--	--	--
		O25	12	PHC	--	--	--	--	--	--	--
		O26	12	P,B,PHC	P,B,PHC	--	B,PHC	--	--	--	--
		O27	12	PHC	--	--	--	--	--	--	--
		O28	12	P,B,PHC	B,PHC	--	B,PHC	--	V,SV	--	--
		P22	12	P	--	--	--	--	--	--	--
		P23	12	PHC *	--	--	--	--	--	--	--
		P24	12	P,B,PHC	P,B,PHC	--	B,PHC	--	V,SV	--	--
		P25	12	B,PHC	--	--	--	--	--	--	--
		P27	12	B,PHC	--	--	--	--	--	--	--
		P28	12	PHC	--	--	--	--	--	--	--
		O22	12	B,PHC	B	--	B,PHC *	--	V,B	--	--
		O23	12	P	--	--	--	--	--	--	--
		O24	12	B,PHC	--	--	--	--	--	--	--
		O25	12	SV,PHC	SV,PHC	--	B,PHC	--	V,BV	--	--
		O26	12	P,B,PHC	--	--	--	--	--	--	--
		O27	12	P,SV,PHC	P,SV,PHC	--	B,PHC	--	V,SV	--	--
		O28	12	B,PHC	--	--	--	--	--	--	--
		R22	12	P	--	--	--	--	--	--	--
		R23	12	B,PHC	--	--	--	--	--	--	--
		R24	12	SV,PHC	P,SV,PHC	--	B,PHC	--	--	--	--
		R25	12	P,B,PHC	--	--	--	--	--	--	--
		R26	12	PHC	--	--	--	--	--	--	--
		R27	12	B,PHC	--	--	--	--	--	--	--
		R28	12	P	--	--	--	--	--	--	--
		S22	12	B,PHC	--	--	--	--	--	--	--
		155(O/P27.5)	12	P,B,PHC	--	P,B,PHC	--	--	--	--	--
		124(P26.25)	12	B,M,PHC	V	--	--	--	--	V,B,M,PHC	--
		125(O/R25.5)	12	B,PHC	V	--	--	--	--	V,B,M,PHC	--

See notes at end of table.

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on-site trenches and borings, for example, contain grain ranging from gravel to clay sizes. A variable lithology is also shown on drilling logs for the monitoring wells.

Based on the drilling log of the deepest monitoring well, MW4d (50.5 feet bg), the deposits underlying the property consist of gravel, fine-to-coarse sand, silt and clay. Significant clay layers at approximately 20 and 30 feet bg are depicted on a generalized cross section although the presence of these layers varies among the deeper wells. In monitoring well MW4d, the overburden is coarse-grained at depths beneath the lower clay horizon, consisting of medium-to-coarse sands with some gravel. Monitoring wells located south of Industrial Avenue, on the Nuodex property, penetrated the top of the Raritan Fire Clay, the lowest unit of the Raritan formation, at depths varying from 40 to 75 feet bg (Geraghty & Miller, Inc., 1982). At that location, the fire clay overlies bedrock, which is composed of the Passaic (formerly Brunswick) Formation. In logs of four old wells drilled on the nearby Nuodex property, the fire clay is reported to be approximately 20 to 30 feet thick in the immediate area. The stratigraphy beneath Hatco probably differs from that described at Nuodex, due to historical (pre-1950) quarry activity in the area.

3.4 Regional Hydrogeology

The lower Raritan/Middlesex County region is underlain by consolidated and unconsolidated rocks ranging in age from Precambrian to Recent. The northwestern part of the region, which covers about 160 square miles, falls within the Triassic Lowland physiographic region and is underlain by sedimentary and igneous rocks. To the southeast lies the Coastal Plain, which is underlain by a thick wedge of sands, gravels, clays and silts of Cretaceous age. These deposits were laid down by rivers in a deltaic environment and generally thicken in a downdip direction. Younger sediments overlie older sediments in a southeastward direction.

Major ground water aquifers in the area, which are most heavily utilized, are Triassic sandstones and shales of the Brunswick Formation and the Farrington and Old Bridge Sands of Cretaceous age. Aquifers of lesser importance are the Sayreville Sand, the Englishtown Sand and the Mount Laurel and Wenonah Sands, all of Cretaceous age, and the Pennsauken Formation and glacial drift deposits of Pleistocene age (Barksdale, 1943).

The Triassic bedrock north of the Raritan River is overlain by sediments of glacial age. Tracing of the Old Bridge and Farrington Sands beyond the Middlesex County borders is difficult due to complex stratigraphic conditions.

Ground water in the bedrock aquifer is found in fractures and other openings, in contrast to the unconsolidated Coastal Plain deposits where ground water occurs in the sediments. Both water-table and confined or artesian aquifers are present. The Triassic sandstone and shale and both the Farrington and Old Bridge Sands are under water-table conditions where exposed in the outcrop area. Where overlain by other sediments or zones of low permeability, these aquifers become confined.

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5.0 GROUND WATER AND SURFACE WATER INVESTIGATIONS

A total of 22 shallow monitoring wells and 6 deep wells was constructed at the Hatco site between 1982 and 1992. These wells were installed as part of ACO, NJPDES, RI/FS scoping and proposed RI work plan requirements. Following installation, the well casings were surveyed, depths to water measured, ground water samples collected and analyzed, and ground water elevations and flow direction calculated. The ground waters beneath the site were designated as AEC 15.

5.1 Monitoring Well Locations and Construction

As part of the RI field work, an initial group of monitoring wells, which included 7 shallow and 2 deep wells, was installed during April and May, 1992. This group was part of a scoping task to determine ground water conditions for the interior portion of the site, the former KO24 area (AEC 7A) and near the former Muck area within AEC 2 (DRAI, November 1992). The scoping report is presented as Appendix D.

On September 10-14, 1992, 3 additional wells (MW20s, MW21s and MW22s) were installed by a New Jersey-licensed well driller of JCA under the supervision of a DRAI geologist. The locations of the wells were selected by DRAI based upon previously-evaluated ground water conditions at Hatco (DRAI, November 1992). The general location of these wells is in the upper west side of the plant. Monitoring well MW20s was installed in the alcohol tank farm (AEC 9B); wells MW21s and MW22s were completed in the scales tank area (AEC 9D) and the phosgene storage pad area (in the northwest portion of AEC 2), respectively (Figure 5.1-1).

All of the 1992 wells were completed in accordance with the protocols presented in the draft RI work plan (DRAI, August 1992). Well completion information for all the wells is presented on Table 5.1-1. Well logs are provided in Appendix C.

The wells were constructed of 4-inch diameter, 0.020-slot PVC screen set above and below the encountered ground water surface. The maximum depth of these three shallow wells was 18 feet bgs at well MW20s. A 4-inch diameter PVC riser was installed from the top of the screen to approximately two feet above the ground surface. The top of each PVC casing was covered with a protective steel casing and locking cap. Following installation, the wells were either pump-developed or hand-bailed until the discharge appeared relatively silt-free and clear.

The locations (latitude and longitude) and elevations of the well casings and ground surface were subsequently surveyed to the nearest 0.01 foot by JCA. Well certification forms are also provided in Appendix C.

5.2 Ground Water Occurrence

The Coastal Plain deposits beneath and surrounding the Hatco site define the local hydrogeology. The relatively coarse-grained units serve as water-bearing zones or aquifers; the silt and clay horizons act as relatively impervious layers retarding vertical ground water flow and creating confined

conditions. The Sayreville Sand, fill and possible glacial and/or alluvial material comprise the uppermost water-bearing zone. Ground water in the shallow zone is under water-table conditions and responds to recharge events. The deeper water-bearing zone is under confined or semi-confined hydraulic conditions.

5.3 Site Hydrogeology and Ground Water Flow

5.3.1 Hydrogeologic Profiles

Based on well and boring logs, three hydrogeologic profiles were constructed (Figures 5.3-1 through 5.3-3). A south-to-north profile, A-A', is oriented along the center of the site (Figure 5.3-1). A west-to-east profile, designated B-B', is oriented along the southern border of the site (Figure 5.3-2). A west-to-east profile, designated C-C', extends across the center of the site (Figure 5.3-3). The lithologic logs for wells MW8s, MW9s and MW10s were reviewed; their lithology, projected to the profile, corresponds with that depicted along profile A-A'.

On the hydrogeologic profiles, an upper unit composed of fill and clay with a variable thickness, ranging from 2 to 11 feet, is shown. In places, the fill and clay is replaced by a clayey sand (profile A-A', between boring B15 and well MW16s, and profile C-C' near boring L-13 and well MW18s). These surficial units overlie a sand and/or poorly-sorted sand, which is the principal zone of flow within the shallow aquifer. Along profile C-C', the shallow sand aquifer thins considerably between wells MW19s and MW4d, where it is replaced by a clayey sand and clay. A light to dark clay layer (1 to 14 feet in thickness) extends across the entire site and separates the shallow aquifer zone from a deeper aquifer zone of flow. This deeper water-bearing zone consists of well to poorly-sorted sands with silty sand and some clay lenses. The deeper aquifer zone is at least 10 feet thick and, in some places, may be up to 30 or 40 feet in thickness.

5.3.2 Ground Water Flow

Based on head differences measured in shallow/deep monitoring well clusters (Tables 5.3-1 and 5.3-2 and Figures 5.3-1 to 5.3.3), it is evident that there are two aquifer zones beneath the Hatco site in the upper 50 feet of unconsolidated deposits. The following is a description of shallow and deep ground water flow during various monitoring periods.

May 14, 1992. Water-level measurements collected from the shallow wells on May 14, 1992 indicate that depths to water in the shallow wells ranged from almost 24 bg in the northeast (MW12s) to less than four feet in the southwest corner (MW1s). The ground water elevations (ft. MSL) also decrease from north to south. Ground water flow in the shallow zone is to the south beneath the property, towards the Raritan River (Figure 5.3-4).

As in the shallow wells, water levels measured in the deep wells indicate that ground water elevations were highest in the northern portion of the site (MW3d) and lowest along the southern perimeter (MW1d and MW7d). The ground water flow direction in the deeper water-bearing zone is also to the south (Figure 5.3-5). Due to the fewer deep wells, the ground water elevation contours for the deep aquifer are not as detailed as for the shallow.

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However, the overall flow direction would not likely change.

July 28, 1992. As with the measurements collected in May, July ground water elevations ranged from approximately 36 feet, MSL in well MW3s to the north to approximately 13 feet, MSL in well MW7s to the south. Overall, the July ground water elevations were slightly lower in all of the monitoring wells. Nonetheless, ground water flow in the shallow aquifer zone was found to be towards the south (Figure 5.3-6).

The July ground water elevations and ground water flow direction in the deeper aquifer are consistent with the May 1992 measurements (Figure 5.3-5). As with the shallow aquifer, ground water elevations ranged from less than 36 feet, MSL in the north (MW3d) to approximately 13 feet in the south (MW7d). Ground water flow is towards the south (Figure 5.3-7) in the deeper zone.

October 19, 1992. The water-level measurements collected from the shallow wells on October 19, 1992 are consistent with those collected earlier, in May and July 1992. Ground water elevations decrease from the northern portion of the site towards the southern property perimeter. Overall, ground water elevations decreased slightly from the previous quarter. Ground water flow in the shallow aquifer is towards the south (Figure 5.3-8).

Ground water elevations in the deep aquifer are again consistent with those previously measured. Ground water elevation decreases from the north towards the south (Figure 5.3-9). Flow in the deeper aquifer is shown to be towards the south.

As illustrated by Figures 5.3-4 through 5.3-9, ground water elevation and flow direction remain largely unchanged over the period of measurement in both the shallow and deep unconsolidated aquifers. The hydraulic gradient in the shallow zone is approximately 0.011; the hydraulic gradient for the deep water-bearing zone is approximately the same, 0.012. Based on the ground water elevations, the relative vertical head between the shallow and deep zones in the northern and western portions of the site is downward (Table 5.3-2). However, in the well pairs located in the site's eastern (MW4s/MW4d) and southern (MW1s/MW1d and MW7s/MW7d) portions, an upward relative head is generally indicated (Table 5.3-2). Earlier (1988, 1990) water levels also demonstrated a downward head in the north portion and upward along the south perimeter of the site.

5.4 Ground Water Sample Collection

DRAI obtained two rounds of ground water samples from all of the wells with the exception of wells MW20s, MW21s and MW22s. These 3 wells were sampled only once during October of 1992. Each well was purged of three volumes of its standing water prior to sample collection. Within two hours of evacuation, ground water samples were obtained with dedicated teflon bailers, poured into laboratory-supplied bottles and immediately stored on ice. The samples were subsequently submitted to Envirotech Research, Inc. (Envirotech), a New Jersey-certified laboratory, Edison, New Jersey, for analyses of VOCs+15, B/Ns+15, COD, pesticides, PCBs, TOC and TOX. The results are presented in Section 8.0 below.

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5.5 Surface Water Sample Collection

On October 28, 1992, four surface-water samples were collected from the former K024 disposal area with dedicated teflon bailers submersed in the water column to the depth at which the sample was to be obtained. All samples were collected 5 to 10 feet from the shoreline. Sample K1 was obtained from the southeast portion of the pond at a depth of approximately 1.5 feet below the water surface, Sample K2 from the northwest portion of the pond at a depth of approximately 1 foot below the surface, and Sample K3 from the southern portion of the pond at a depth of approximately 1 foot below the water surface. Sample K4 was collected from the surface in the northern portion of the pond. The samples were subsequently poured into laboratory-supplied bottles, placed on ice and submitted to Envirotech for analysis of VOCs, B/Ns, metals and PCBs. The results are presented in Section 8.0 below.

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6.0 SOIL AND SEDIMENT SAMPLING RESULTS

Soil analysis laboratory data sheets are provided in Attachment I.

6.1 Region I

6.1.1 AEC 1 - Lagoons

AEC 1 consists of capped (unused) lagoons No. 1 and No. 2 located in the southwest corner of the site, south of the former ponds area (AEC 2) on the west and east sides of AEC 1, respectively. These lagoons were constructed in approximately 1966 and received effluent from the former pond system until approximately 1970. They were used to recover organics from this effluent and to regulate the flow of liquid to the MCUA. After the pond system was eliminated, the lagoons were used for storage of wastewater in the event that the underground lines connecting to the MCUA were disrupted. In addition, for a temporary period starting in 1984 Hatco used these lagoons for recovery operations.

In 1991, the lagoons were taken out of service. All lines in and out of the lagoons were disconnected, and an impermeable liner was installed to prevent contaminated soil and sludge from coming in contact with rainfall.

Eighteen soil and/or sludge samples, including 2 duplicates, were collected from the lagoons between December 1987 and March 1988; 13 samples were obtained from the surface (0 to 2 feet bg), and 5 samples from below the clay liner. The exact locations of surface samples HS1 and HS2 are unknown. Seventeen soil samples, collected from the lagoons, were analyzed for VOCs, 18 for B/Ns, 8 for AEs, 18 for PCBs, 10 for metals and 10 for PHCs.

In addition, 3 samples were collected from locations adjacent to the lagoons; one during March 1988 (I20/0-0.5') and the others during April 1992 (MW7d/1.5-2' and MW7d/7.7.5'). Sample location MW7d is approximately 25 feet hydraulically downgradient (southwest) of the lagoons, and sample location I20 is within 10 feet east of the lagoons. Sample MW7d/1.5-2' was analyzed for B/Ns and PCBs, and Sample MW7d/7-7.5' for VOCs, B/Ns and PCBs. Sample I20/0-0.5' was analyzed for PCBs.

Soil analytical results are shown on Figures 6.1-1 through 6.1-10 and listed on Tables 6.1-1 through 6.1-6.

6.1.1.1 Above Clay Liner

Volatile Organic Compounds. Targeted VOCs (TVOCs) were detected in 9 of 10 samples analyzed at concentrations ranging from 5.8 parts per million (ppm) in Sample HS2/0-1' (Lagoon No. 2) to 3,780 ppm in Sample 203/0-0.5' (Lagoon No. 1). Non-targeted VOCs (NTVOCs) were reported in all 10 samples at levels ranging from 10.51 ppm in Sample HS2/0-1' to 1,610 ppm in Sample 203/0-0.5'.

Benzene; 1,1-dichloroethane (1,1-DCA) and 1,1,1-trichloroethane (1,1,1-TCA) were detected at concentrations exceeding the NJDEPE Impact to Ground Water Soil Cleanup Criteria (SCC) (Figure and Table 6.1-1). Benzene was reported slightly above the Impact to Ground Water SCC of 1 ppm at only one sample

location in the southwest corner of Lagoon No. 2; analysis of sample 205/0-0.5' revealed a benzene concentration of 1.7 ppm. 1,1-DCA exceedances (above 1 ppm) were detected at 7 locations, mostly from Lagoon No. 1 at concentrations ranging from 1.6 ppm in Sample 206/0-0.5' to 180 ppm in Sample 203/0-0.5'. 1,1,1-TCA exceedances (above 50 ppm) were reported in 5 samples, 4 of which were from Lagoon No. 1, at levels ranging from 150 ppm in Sample 204/0-0.5' to 3,600 ppm in Sample 203/0-0.5'.

Semi-Volatiles. Targeted B/Ns (TB/Ns) were detected in all 12 lagoon samples at concentrations ranging from 120 ppm in Sample HS1B/0-1' (Lagoon No. 1) to 140,300 ppm in Sample 206/0-0.5' (Lagoon No. 2). Non-targeted B/Ns (NTB/Ns) were reported in 5 samples at levels ranging from 2,558 ppm in Sample HS1B/0-1' to 58,100 ppm in Sample 202/0-0.5' (Lagoon No. 1). NTB/N data were not available for Environ Samples 203 through 208.

Bis(2-ethylhexyl) phthalate (DEHP), butylbenzyl phthalate (BBP), di-n-butyl phthalate (DBP) and di-n-octyl phthalate (DOP) were detected at concentrations exceeding the Impact to Ground Water SCC of 100 ppm in both lagoons at the 0-0.5-foot interval (Figure and Table 6.1-2). DEHP exceedances ranged from 41,000 ppm in Sample HS2/0-1' (Lagoon No. 2) to 130,000 ppm in Sample 206/0-0.5'. BBP exceedances ranged from 650 ppm in Sample HS2/0-1' to 31,000 ppm in Samples 207/0-0.5' and 208/0-0.5', all of which were collected from Lagoon No. 2. DBP exceedances ranged from 370 ppm in Sample 201/0-0.5' (Lagoon No. 1) to 17,000 ppm in Sample 203/0-0.5' (Lagoon No. 1), and DOP from 120 ppm at Sample HS1B/0-1' to 1,800 ppm in Sample 208/0-0.5' (Lagoon No. 2).

Generally, B/N exceedances were evenly distributed across both lagoons. AEs were not detected in the 3 samples analyzed (HS1, HS1B and HS2).

Polychlorinated Biphenyls. PCB Aroclor 1248 concentrations exceeded the NJDEPE Impact to Ground Water SCC of 2 ppm in all 13 samples collected from above the clay liner in both lagoons (Figure 6.1-3 and Table 6.1-4). PCB exceedances ranged from 40 ppm in Sample 205/0-0.5' (Lagoon No. 2) to 510 ppm in Sample 202/0-0.5' (Lagoon No. 1).

Metals and Miscellaneous Parameters. Only Sample HS1/0-1' (Lagoon No. 1) was analyzed for metals. Lead was the sole exceedance detected (109 ppm).

PHCs were reported above the NJDEPE Total Organic Compound SCC of 10,000 ppm in all 9 samples collected from both lagoons. The PHCs ranged from 57,000 ppm in Sample 204/0-0.5' (Lagoon No. 1) to 160,000 ppm in Sample 208/0-0.5' (Lagoon No. 2).

Metal and PHC analytical results are shown on Figure 6.1-4 and listed on Tables 6.1-5 and 6.1-6.

6.1.1.2 Below Clay Liner

Volatile Organic Compounds. TVOCs were detected in all 7 samples analyzed at concentrations ranging from 0.12 ppm in Sample HB10/4-4.5' (Lagoon No. 2) to 1,078 ppm in Composite Sample HB1-6/0-0.5' (Lagoon No. 1). NTVOCs were also found in all 7 samples at levels ranging from 0.15 ppm in Composite Sample HB7-12/1.5-2' to 1,128 ppm in Composite Sample HB1-6/0-0.5'.

TVOC compounds that exceeded their respective SCCs include 1,1-DCA and 1,1,1-TCA (Figure 6.1-5). 1,1-DCA and 1,1,1-TCA exceedances were both detected in Lagoon No. 1 in Composite Sample HB1-6/0-0.5' at concentrations of 320 and 430 ppm, respectively.

Semi-Volatiles. TB/Ns were detected in six composite samples, three from each lagoon, and in one discrete sample from Lagoon No. 2 (Figure 6.1-6). TB/Ns ranged from 328 ppm in Composite Sample HB1-6/1.5-2' to 1,637 ppm in Composite Sample HB7-12/0-0.5'. NTB/Ns were also observed in all 7 samples at levels ranging from 98 ppm in Composite Sample HB7-12/0.5-1' to 2,035 ppm in Composite Sample HB7-12/0-0.5'.

DEHP, BBP, DBP, DOP and naphthalene were detected at concentrations exceeding their SCC of 100 ppm. DEHP exceedances were reported at 7 locations at concentrations ranging from 210 ppm in Composite Sample HB7-12/1.5-2' to 1,100 ppm in Composite Sample HB7-12/0-0.5'. BBP exceedances were detected in both lagoons at 1 sample location each, Composite Samples HB7-12/0-0.5' (340 ppm) and HB1-6/0-0.5' (630 ppm). DBP exceedances were also observed at both lagoons in Composite Samples HB7-12/0-0.5' (130 ppm) and HB1-6/0-0.5' (230 ppm). DOP and naphthalene exceedances were only detected in Composite Samples HB1-6/0-0.5' (110 ppm) and HB7-12/1.5-2' (220 ppm).

AEs were reported in 2 samples; one from each lagoon. Analysis of Composite Samples HB1-6/0-0.5' and HB7-12/0-0.5' revealed AE concentrations of 0.62 ppm and 0.31 ppm, respectively. All AE compounds were detected at concentrations below their respective SCCs.

Polychlorinated Biphenyls. PCB Aroclor 1248 was detected at concentrations exceeding the SCC in all 7 samples (Figure 6.1-6). PCB exceedances ranged from 10 ppm in Sample HB10/4-4.5' (Lagoon No. 2) to 92 ppm in Composite Sample HB7-12/1.5-2' (Lagoon No. 2). PCBs were observed at concentrations of similar magnitude in both lagoons.

6.1.1.3 Southwest and East of the Lagoons

Analysis of sample MW7d/1.5-2', collected southwest and downgradient of Lagoon No. 1, revealed surface TB/N and NTB/N concentrations of 1.07 and 0.72 ppm, respectively. Total PCBs were detected at 0.9 ppm. All TB/N compounds and PCBs were reported below their respective SCCs.

Analysis of subsurface Sample MW7d/7-7.5' revealed TVOC and NTVOC concentrations of 0.2 and 15 ppm, respectively. All TVOCs were detected below their respective SCCs. TB/N and NTB/Ns were observed at 115.26 and 67.5 ppm, respectively. DEHP was the only TB/N exceedance (110 ppm) detected (Figure 6.1-6). PCB Aroclors 1248 and 1254 were reported at a concentration of 2.3 ppm, which only slightly exceeds the SCC of 2 ppm. East of Lagoon No. 2, at sample location I20/0-0.5', PCBs were detected, below the SCC, at a concentration of 0.13 ppm.

6.1.1.4 Summary

Both lagoons have been impacted by VOCs, B/Ns, PCBs and PHCs. Elevated concentrations of TVOCs; predominantly 1,1-DCA and 1,1,1-TCA; have impacted Lagoons Nos. 1 and 2. Lagoon No. 2 was also impacted by benzene. 1,1,1-TCA

and 1,1-DCA exceedances were detected at the north end of Lagoon No. 1, above and below the liner to a depth of 0 to 0.5 feet. The southern end of Lagoon No. 2 was slightly impacted by benzene and 1,1-DCA and, to a greater extent, by 1,1,1-TCA at the surface (above the clay liner). Based on analytical results from soil sample location MW7d, VOCs have not impacted soils downgradient of the lagoons.

Generally, in order of decreasing concentrations, DEHP, BBP, DBP and DOP impacted the lagoons above and below the liner. These B/Ns were detected at an order of magnitude higher above the liner. Except for DEHP and naphthalene, all exceedances were found at the 0 to 0.5-foot interval below the liner. DEHP exceedances were reported at the 1.5 to 2 and 4 to 4.5-foot intervals below the liner in Lagoons Nos. 1 and 2, respectively. A naphthalene exceedance was detected at the 1.5 to 2-foot interval in Lagoon No. 2. Southwest of the lagoons, at the 7 to 7.5-foot interval in Sample MW7d, DEHP was the only B/N exceedance detected.

Overall, PCBs, predominantly Aroclor 1248, were reported at significantly higher concentrations above the clay liner in the southern section of Lagoon No. 1 and northern section of Lagoon No. 2 at a depth of 0 to 1 foot. PCBs were also detected below the liners of both lagoons to a depth of approximately 2 feet, but at an order of magnitude lower than the concentrations observed above the liner. PCBs have not impacted areas southwest of Lagoon No. 1 and east of Lagoon No. 2.

At the 0 to 0.5-foot sample interval above the liner, both lagoons have been significantly impacted by high levels of PHCs. Subsurface samples were not analyzed for PHCs.

6.1.2 AEC 2 - Former Ponds and Muck Areas

AEC 2 is located in the western portion of the site in the former ponds areas. This section consisted of four unlined holding ponds and two muck areas, which were used to receive various wastes from manufacturing operations. These wastes included, but were not limited to, used PCB heat-transfer fluids and effluent from the ester and benzyl chloride plants, such as bis(2-ethylhexyl) phthalate, diethyl phthalate and di-n-butyl phthalate. The unlined muck storage areas were formed when sediments, precipitates, carbon residues and filter clays were cleaned out of the unlined ponds. In 1970, the ponds were mucked out, then filled and covered with soil. In 1991, the surface over the northern two liquid settling ponds was paved to prevent the spread of PCB contamination.

Three hundred and eighty seven (387) soil samples, including 25 duplicates, have been collected from AEC 2. One hundred and ten (110) soil samples were analyzed for VOCs; 251 for B/Ns; 58 for AEs; 366 for PCBs; and 38 for metals. Soil sample locations and analytical results are shown on Figures 6.1-1 through 6.1-10 and listed on Tables 6.1-7 through 6.1-12.

6.1.2.1 Surface

Volatile Organic Compounds. TVOCs were detected in 24 surface samples (0 to 2 feet bg) at concentrations ranging from 0.005 ppm in Sample III4/1.5-2' to 309

ppm in Sample B15(A)/1.5-2'. NTB/Ns were reported in 26 samples at levels ranging from 0.02 ppm in Sample J13/1.5-2' to 416 ppm in Sample 112/1.5-2'.

Benzene, xylene and trichloroethylene (TCE) were detected at levels exceeding their respective SCCs (Figure 6.1-1 and Table 6.1-7). Benzene exceedances were reported at three sample locations; one each at or near Pond Nos. 1, 3 and 4. Benzene concentrations of 2.1 ppm (duplicate "none detected" [ND]), 6.1 ppm (duplicate ND) and 28 ppm were detected in Samples B17/0.5-1' (Pond No. 1), B15/1.5-2' (Pond No. 3) and 112/1.5-2' (Pond No. 4), respectively.

Xylene and TCE exceedances were also reported at Pond Nos. 1 and 3 in the same samples. A TCE concentration of 11 ppm (duplicate ND) was detected in Sample B17/0.5-1', and a xylene concentration of 100 ppm (duplicate 6.9 ppm) in Sample B15/1.5-2'.

Semi Volatiles. TB/Ns were detected in 78 samples at concentrations ranging from 0.21 ppm in Sample M18/1.5-2' to 2,308 ppm in B15(A)/1.5-2'. NTB/Ns were found in 79 samples at concentrations ranging from 0.21 ppm in Sample K11/1.5-2' to 22,489 ppm in Sample TP29/1-2'.

DEHP, BBP, DBP and DOP were frequently detected at elevated concentrations (Figure 6.1-2 and Table 6.1-8). DEHP exceedances were reported predominantly in all the former ponds, Muck Areas 5 and 6 and the phosgene cylinder storage pad (PCSP) area at levels ranging from 110 ppm in Sample MW17s/1.5-2' (Muck Area 5) to 14,000 ppm in Sample TP33/0.5-1.5' (Muck Area 6). The average DEHP concentrations in Pond Nos. 1, 2, 3 and 4 are 1,032; 890; 268 and 965 ppm, respectively. DEHP average concentrations for Muck Areas 5 and 6 and the PCSP area are 268; 2,884 and 343 ppm, respectively.

A total of 5 BBP exceedances was detected; two at Pond No. 1, two at Muck Area 6 and 1 within 25 feet west of Muck Area 5. BBP exceedances ranged from 260 ppm in Sample MW16d/1.5-2' (Pond No. 1) to 12,000 ppm in Sample TP29/1-2' (Muck Area 6).

DOP exceedances were reported at each of the above-referenced locations except for former Pond No. 3 and the PCSP area. DOP exceedances ranged from 150 ppm in Sample B18/0-1' (Muck Area 6) to 1,400 ppm in Sample TP33/0.5-1.5' (Muck Area 6).

A total of 9 DBP exceedances was detected, predominantly at locations at or within the vicinity of all former pond and muck areas. DBP exceedances ranged from 110 ppm in Sample 113/0-0.5' (approximately 100 feet south of Pond No. 3) to 6,400 ppm in Sample TP33/0.5-1.5' (Muck Area 6).

AEs were not detected in any surface samples.

Polychlorinated Biphenyls. PCBs were detected in 140 samples. PCB exceedances, predominately Aroclor 1248, ranged from 2.1 ppm in Sample 1115/1.5-2' (Pond No. 3) to 4,900 ppm in Sample TP33/0.5-1.5' (Muck Area 5, Figure 6.1-3 and Table 6.1-10). The average surface PCB concentrations at Ponds 1, 2, 3 and 4 are 118, 67, 9 and 50 ppm, respectively. The PCB averages at Muck Areas 5 and 6 and at the PCSP area are 164, 870 and 30 ppm, respectively.

Metals and Petroleum Hydrocarbons. Arsenic was detected at concentrations slightly exceeding the SCC of 2 ppm. These exceedances were detected at 2.2 ppm in Sample I18/1.5-2', 2.8 ppm in Sample B17(B)/1.5-2' and 2.84 ppm in Sample I10/1.5-2'; only one PHC exceedance was reported. Analysis of Sample I10/1.5-2', collected within the PCSP area, revealed a PHC concentration of 11,000 ppm (Figure 6.1-4 and Table 6.1-11).

6.1.2.2 Subsurface

Volatile Organic Compounds. In subsurface soils (>2 feet bg), TVOCs ranged from 0.008 ppm in Sample I113/4' to 6,101 ppm in Sample H14/4'. NTB/Ns ranged from 0.01 ppm at 4 sample locations to 4,719 ppm in Sample B15/6'.

TVOC exceedances detected include benzene, TCE, xylenes and toluene (Figure 6.1-5). Benzene exceedances were found primarily in all former ponds, Muck Area 5 and to a lesser extent, Muck Area 6 and the PCSP area. These exceedances ranged from 1.3 ppm in Sample TP30/8' (Muck Area 6) to 53 ppm in Sample I113/2.5-3', which was obtained within 100 feet south of Pond No. 3.

Xylene and TCE exceedances were both detected in Pond No. 1. Xylenes were observed at 34 ppm in Sample H9/14', and TCE levels ranged from 3.2 ppm in Sample H9/12' to 31 ppm in Sample MW16s/7-7.5'. In addition, xylene exceedances were found in Ponds Nos. 3 and 4 at concentrations of 60 ppm (Sample B15/4') and 21 ppm (Sample I112/4'), respectively. In Pond No. 3, at samples locations H14/4' and H14/6', toluene exceedances were reported at 6,100 and 1,700 ppm; respectively.

Semi-Volatiles. TB/Ns were detected in 172 samples at concentrations ranging from 0.07 ppm in Sample F9/10' to 76,600 ppm in Sample TP32/5-6'. NTB/Ns were found in 171 samples at levels ranging from 0.3 ppm (duplicate 7.9 ppm) in Sample TP40/4-5' to 195,606 ppm in Sample MW16s/7-7.5'.

DEHP, BBP, DBP, DOP and diethyl phthalate (DEP) were frequently detected at elevated concentrations (Figure 6.1-6). DEHP exceedances were found in subsurface soils predominantly at all former ponds, Muck Areas 5 and 6 and the PCSP area. The DEHP exceedances ranged from 120 ppm in Sample 159/4.5-5' (Pond No. 3) to 85,000 ppm in Sample MW16s/7-7.5' (Pond No. 1). DEHP exceedances were detected at depths of 14 feet bg in Pond No. 1, 10 feet bg in Ponds Nos. 2 and 3, Muck Area 5 and the PCSP area and at 6 feet bg in Pond No. 4. In Muck Area 6, DEHP exceedances were reported as deep as 8 feet bg. DEHP average concentrations for Pond Nos. 1, 2, 3 and 4 are 9,117; 515; 1,920 and 1,936 ppm; respectively. DEHP average levels for Muck Areas 5 and 6 and the PCSP area are 703; 2,757; and 534 ppm; respectively.

BBP exceedances were mostly detected in the above-referenced areas at concentrations ranging from 106 ppm in Sample B9/6' (Pond No. 1) to 25,000 ppm in Sample MW16s/7-7.5'. BBP exceedances were reported at depths of 14 feet bg in Pond No. 1, 10 feet bg in Pond No. 2, Muck Area 5 and the PCSP area and 6 to 10 feet bg in Pond No. 3 and Muck Area 6. In Pond No. 4, BBP exceedances were observed to depths of 5 feet bg. BBP average concentrations for Ponds Nos. 1, 2, 3 and 4 are 2,922; 80; 1,469; and 553 ppm; respectively. At Muck Areas 5 and 6 and the PCSP area, BBP average levels are 278; 3,147 and 206; ppm, respectively.

DOP, DBP and DEP exceedances were detected at less elevated concentrations than the BBP and DEHP levels in all areas. DOP exceedances ranged from 110 ppm in Samples MW17s/9.5-10' (Muck Area 5) and TP26/5-6' to 13,000 ppm in Sample MW16s/7-7.5'. DBP concentrations ranged from 110 ppm in Sample L9/4' to 15,000 ppm in Sample MW16s/7-7.5'. DEP exceedances ranged from 57 ppm in Sample MW19s/9-10' (Pond No. 2) to 13,000 ppm in Sample TP18/3-4' (Pond No. 4).

AEs were only detected in 14 deep samples. The AEs ranged from 0.04 ppm in Sample B15/10' to 11.22 ppm in Sample H9/10'. All AEs were found at levels below their respective SCCs.

Polychlorinated Biphenyls. PCB Aroclors 1248 and, to a much lesser degree, 1254 were found in subsurface soils in AEC 2. At the 2 to 5-foot interval, PCB exceedances ranged from 2.1 ppm in Sample TP17/4' (Pond No. 4) to 12,000 ppm in Sample J10/4-4.5' (PCSP area, Figure 6.1-7). Average PCB concentrations for Pond Nos. 1, 2, 3 and 4 are 122, 121, 74 and 192 ppm, respectively. PCB averages for Muck Areas 5 and 6 and the PCSP area are 937; 374; and 1,882 ppm; respectively.

PCB exceedances at the 5 to 7-foot interval ranged from 2.88 ppm in Sample D14/6' to 9,500 ppm in Sample TP11/5-6' (Pond No. 1, Figure 6.1-8). At this depth interval, the majority of the samples was collected from former Pond Nos. 1 and 3 and Muck Areas 5 and 6. The respective PCB averages are 2,420; 88; 4; and 909 ppm; respectively.

PCB exceedances at the 7 to 10-foot interval ranged from 4.7 ppm in Sample TP4/7-8' (Pond No. 2) to 8,300 ppm in Sample TP3/8-9' (Pond No. 1, Figure 6.1-9). At this depth interval, the majority of the samples was collected from former Pond Nos. 1, 2 and 3, from Muck Areas 5 and 6 and from the PCSP area. The respective PCB averages are 1,495; 85; 23; 10; 2 and 82 ppm; respectively.

At the 12 to 14-foot interval, all samples were collected from either Pond Nos. 1 or 2 or the PCSP area. PCB exceedances ranged from 2.1 ppm in Sample G10/12' (Pond No. 2) to 400 ppm in Sample TP3/12' (Pond No. 1). All PCB analytical results are shown on Figure 6.1-10.

Metals and Petroleum Hydrocarbons. Arsenic exceedances were detected at 2.3 ppm in Sample H9/14', 2.6 ppm in Sample H9/6' and 2.8 ppm in Sample H9/12'. Only one PHC exceedance was reported. Analysis of Sample 158/4-5.5' (Pond No. 3) revealed a PHC concentration of 15,000 ppm (Figure 6.1-4).

6.1.2.3 Summary

Overall, B/Ns, PCBs and, to a lesser extent, VOCs have impacted AEC 2 primarily in the former ponds, muck and PCSP areas. Benzene was the most frequently detected VOC compound in surface and subsurface soils at levels above the SCC of 1 ppm. Only a few slightly elevated levels of xylenes and TCE were found in surface soils. In Pond No. 1, there were elevated levels of benzene, xylenes and TCE as deep as 14 feet bg. In Pond No. 3, two "hot spots" of toluene were detected as deep as 6 feet bg.

Generally, phthalates have impacted surface and subsurface soils in AEC 2. More specifically, DEHP, BBP, DBP, DOP and DEP have impacted the former ponds

to depths of 6 to 14 feet bg and the PCSP area and Muck Areas 5 and 6 to depths of 8 to 10 feet bg. DEHP was more frequently detected at all depths than the other phthalates.

With the exception of Pond No. 1, PCB levels generally decrease with depth and were first detected below the SCC at approximately 8 to 10 feet bg in the Muck Areas, and 10 to 12 feet bg in Ponds Nos. 3 and 4. In Pond No. 1, the highest concentrations of PCBs were reported at the deepest sample interval (14 feet bg).

Arsenic and PHC exceedances were only detected in a few samples and at levels not significantly greater than their respective SCCs. Therefore, these parameters are of low environmental concern.

6.1.3 AEC 21A - Crow's Mill Tributary

AEC 21A is the Crow's Mill Tributary. Although historically this creek has not been identified as an AEC, DRAI conducted sediment sampling in March 1988. Crow's Mill Tributary has been designated an AEC because of the past site drainage history and results of previous sediment investigations.

Twenty-one samples, including one duplicate, were collected from AEC 21A. 3 samples were analyzed for VOCs; 2 for B/Ns; and 21 for PCBs. Soil analytical results are shown on Figures 6.1-1 through 6.1-7 and listed on Tables 6.1-13 through 6.1-16.

6.1.3.1 Surface and Subsurface

TVOCs and NTVOCs at the surface were each detected at a concentration of 0.06 ppm in Sample CM6/0.5-1'. TVOCs in subsurface soils were only found in one sample. Analysis of Sample CM11/4' revealed a TVOC concentration of 0.11 ppm. NTVOCs were found in both samples at concentrations of 0.22 ppm (Sample CM9/4') and 0.03 ppm (Sample CM11/4'). All TVOCs detected were below their respective SCCs. Analysis for TB/Ns was not requested in surface samples; TVOCs were only detected in subsurface soils in Sample CM11/4' at a concentration of 0.05 ppm. NTB/Ns were found at concentrations of 0.34 ppm in Sample CM9/4' and 2.53 ppm in Sample CM11/4'. All TB/Ns were detected below their SCCs.

PCB exceedances were detected in 7 surface samples at concentrations ranging from 3.9 ppm in Sample CM1(A)/0-0.5' to 110 ppm in Sample CM5/0-1'. The latter sample was collected in March 1988. Analysis of RI samples, collected at the same locations and within the upper 2-foot interval, revealed PCB concentrations of 0.63 ppm (0-0.5' interval) and 0.73 ppm (1.5-2' interval). Both levels are below the SCC. The remaining 5 exceedances were detected at sample locations at the south end of the tributary (Figure 6.1-3 and Table 6.1-16). PCBs were only found at a concentration of 0.03 ppm, below the SCC, in subsurface sample CM11/4'.

6.1.3.2 Summary

AEC 21A has been impacted by "hot spots" of PCBs to a depth of 1 foot below the creek bottom. However, VOCs and B/Ns have not impacted this area.

6.2 Region II

6.2.1 AEC 3 - Railroad Siding Area

This AEC is the railroad siding area, which extends from the southern edge of the property near the existing lagoons to the northeast corner of the Ester I building. Materials used in the manufacturing processes and made at the transfer facility are pumped from and to rail cars. Discharges of materials during pumping/transfer have occurred in this area. Contaminated soil was excavated from this AEC and disposed of off site.

Twenty-five samples, including one duplicate, were collected from AEC 3; 11 samples were analyzed for VOCs, 19 for B/Ns, 6 for AEs, 25 for PCBs, and 7 for metals.

Soil analytical results are shown on Figures 6.2-1 through 6.2-5 and listed on Tables 6.2-1 through 6.2-5.

6.2.1.1 Surface

Volatile Organic Compounds. TVOCs were detected in 2 samples. TVOC concentrations were found at 0.11 ppm in Sample G18/1.5-2' and at 0.1 ppm in Sample I21/1.5-2'. NTVOCs were detected in 2 samples, Sample F16.5/1.5-2' (0.02 ppm) and Sample GG10/4' (0.44 ppm). All detected VOCs were below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 10 samples at concentrations ranging from 0.29 ppm in Sample A15/1.5-2' to 326 ppm in Sample B21/0-0.5'. NTB/Ns were detected in all 11 samples at levels ranging from 0.37 ppm in Sample HH13/1.5-2' to 3,608 ppm in Sample B21/0-0.5'.

DEHP was the only B/N compound that exceeded the SCC of 100 ppm (Figure and Table 6.2-2). DEHP exceedances were detected at the southern end of the railroad siding area in Samples H20/1.5-2' and B21/0-0.5' at 230 and 320 ppm, respectively.

Polychlorinated Biphenyls. PCBs were detected in 12 samples. PCB exceedances, consisting of Aroclors 1248 and 1254, were only reported at the southern end of AEC 3 in Samples G18/1.5-2' (2.5 ppm), B21/0-0.5' (2.9 ppm) and SE2/0-0.5' (15 ppm) (Figure 6.2-3 and Table 6.2-4).

Metals. Arsenic and lead were detected above their SCCs of 2 and 600 ppm, respectively, in the central and southern sections of AEC 3 (Figure 6.2-4 and Table 6.2-5). Arsenic exceedances were found in 4 samples at concentrations ranging from 2.1 ppm in Sample GG10/0-0.5' to 155 ppm in Sample F16.5/1.5-2'. Lead exceedances were detected at 788 ppm in Sample B21/0-0.5' and 1,660 ppm in Sample F16.5/1.5-2'.

6.2.1.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in 6 samples at concentrations ranging from 0.03 ppm in Sample G18/6' to 0.73 ppm in Sample GG10/8'. NTVOCs were found in 5 samples at levels ranging from 0.02 ppm in Sample G18/6' to 0.44 ppm in Sample GG10/4'. All detected VOCs were below their respective SCCs.

Semi-Volatiles. TB/Ns were detected in 6 samples at levels ranging from 0.72 ppm in Sample G18/6' to 1,200 ppm in Sample GG10/8'. NTB/Ns were found in all 7 samples at concentrations ranging from 0.1 ppm in Sample HH13/6' to 129 ppm in Sample GG10/8'.

Naphthalene was the only B/N exceedance detected (Figure 6.2-5). Analysis of Sample GG10/8' revealed a naphthalene concentration of 1,200 ppm.

Polychlorinated Biphenyls. PCBs were detected in 3 samples. In only one sample did the level slightly exceed the SCC. Analysis of Sample G10/8' revealed a PCB concentration of 2.3 ppm.

6.2.1.3 Summary

At the surface of the southern portion of AEC 3, a few "hot spots" of DEHP, PCBs, arsenic and lead have impacted AEC 3. In subsurface soils a "hot spot" of naphthalene was detected at a depth of 8 feet bg at the northern end of the railroad siding.

VOCs have not impacted this AEC at the surface or subsurface.

6.2.2 AEC 4 - Ester I and Hydrotherm Buildings and Acid Tank Farm

AEC 4 consists of the Ester I and Hydrotherm Buildings and the Acid Tank Farm. In this AEC, the Ester I process produces mainly plasticizers, dielectric fluids and phenylxylylethane (PXE). Hydrotherm Units Nos. 1 and No. 2 were constructed on the south side of the Ester I building in 1960. These units used PCBs as a heat-transfer fluid. This area has been designated an AEC because: 1) chemicals are transported in and out of the building and used in operations performed in the building; 2) a hazardous waste is produced from the reaction; and 3) PCBs were used in this vicinity.

46 soil samples were collected from AEC 4; 10 samples were analyzed for VOCs, 11 for B/Ns, 2 for AEs, and 46 for PCBs. In addition, 4 samples of product were collected from this area for PCB analyses. Soil analytical results are shown on Figures 6.2-1 through 6.2-7 and listed on Tables 6.2-6 through 6.2-10.

6.2.2.1 Surface

Volatile Organic Compounds. TVOCs were detected in all 4 samples analyzed, and NTVOCs in 3 samples. TVOC concentrations ranged from 0.02 ppm in Samples HH10/1.5-2' and A10/1.5-2' to 130 ppm in Sample A4.75/1.5-2'. NTVOC levels ranged from 0.27 ppm in Sample A8/1.5-2' to 1,200 ppm in Sample A4.75/1.5-2'.

Xylene was the only exceedance detected (Figure 6.2-1 and Table 6.2-6). Analysis of Sample A4.75/1.5-2', located at the west corridor of the Ester I building, revealed a xylene concentration of 130 ppm.

Semi-Volatiles. B/Ns were detected in all 8 samples. TB/N levels ranged from 0.86 ppm in Sample HH9/1.5-2' to 2,607 ppm in Sample A9/0-0.5'. NTB/N concentrations ranged from 15.09 ppm in Sample A10/1.5-2' to 2,650 ppm in Sample A4.75/1.5-2'.

DEHP and DEP were the only TB/N exceedances detected (Figure 6.2-2 and Table 6.2-7). Analysis of Sample A9/0-0.5', located at the southwest corner of the Acid Tank Farm, revealed DEHP and DEP concentrations of 2,400 and 140 ppm; respectively.

AE compounds were not detected in surface soils.

Polychlorinated Biphenyls. Excluding product samples and samples collected from the Hydrotherm Building and vicinity, PCBs were detected in 5 samples. PCB Aroclor exceedances were found in Sample F10/0-0.5' (260 ppm), which was obtained downgradient of both the Hydrotherm Building and the Acid Tank Farm and in Sample A9/0-0.5' (140 ppm, Figure 6.2-3 and Table 6.2-9).

Four samples of product were collected: one from the trench located east of the Hydrotherm Building (PROD-1), two from each of the Sebacic Heater (SH) units (SH1 and SH2) and one from Fuel Oil Tank No. 3 (FOT-3). These samples were analyzed for PCBs.

In the product sample, PROD-1, a PCB Aroclor 1248 exceedance of 410 ppm was found. PCB concentrations were ND in samples HS-1, SH-2 and FOT-3.

At the Hydrotherm Building, surface samples were collected from grade and within the concrete pad, which ranged in thickness from 6 to 14 inches. PCB Aroclor 1248 exceedances at the concrete surface ranged from 4.7 ppm at sample location SC21 (within 10 feet northeast of the Hydrotherm Building) to 52 ppm at sample location SC22 (within 25 feet south of the structure). Within the concrete pad, Aroclor 1248 exceedances ranged from 2.8 ppm in Sample C04/1-2" to 1,200 ppm in Sample C01/0-1' (Table 6.2-10).

6.2.2.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in all 6 samples at concentrations ranging from 0.18 ppm in Sample A11A/9' to 281 ppm in Sample A8/4'. NTVOCs were found in all 6 samples at levels ranging from 0.24 ppm in Sample A11A/9' to 905 ppm in Sample A11A/11'.

Benzene and xylene were the only exceedances detected (Figure 6.2-5). Benzene was observed, within 10 feet south and downgradient of the Acid Tank Farm, at a concentration of 26 ppm in Sample A11A/11'. Xylene was detected at a concentration of 270 ppm in Sample A8/4', at the southeast corner of the Hydrotherm Building.

Semi-Volatiles. TB/Ns and NTB/Ns were detected in all 3 samples. TB/N concentrations ranged from 1.11 ppm at sample location A11A/9' to 10.54 ppm at sample location MW15s/4-4.5'. NTB/N levels ranged from 7.62 ppm in Sample A11A/9' to 411 ppm in Sample MW15s/4-4.5'. There were no B/N exceedances or AEs detected in subsurface soils.

Polychlorinated Biphenyls. In addition to the Hydrotherm Building samples, two samples were analyzed for PCBs. PCBs were not detected downgradient of the Acid Tank Farm at sample location A11A to depths of 9 and 11 feet bg.

At the Hydrotherm Building, below the concrete pad, PCB Aroclor 1248 exceedances ranged from 6.4 ppm at sample location CB7/7.5-8' to 1,700 ppm at sample location CB9/0-0.5'. In addition, PCB exceedances, consisting of Aroclors 1248 and 1254, were detected east and adjacent to the Hydrotherm Building to depths of 4 to 4.5 feet below the concrete at concentrations of 16 ppm (Samples A8/4') and 12.6 ppm (MW15s/4-4.5').

6.2.2.3 Summary

VOCs and B/Ns have not significantly impacted AEC 4. Xylenes, DEHP and DEP "hot spots" were detected in surface soils, and one "hot spot" of benzene was found in subsurface soils to a depth of 11 feet bg.

PCB Aroclor 1248, however, has adversely impacted AEC 4 within and at the vicinity of the Hydrotherm Building. PCB exceedances were detected at the surface, within the concrete pad and to a depth of 8 feet below the pad. The highest levels of PCBs were reported within 0 to 2 feet below the bottom of the concrete pad.

6.2.3 AEC 5 - Ester II Building, Tank Farm and Areas East and South

AEC 5 is comprised of the Ester II building and vicinity and the transfer station. This AEC is also a process area in which diisodecyl phthalate is manufactured and crude PXE is refined. However, the processing in Ester II does not generate a hazardous waste. This area is designated an AEC due to chemicals being transported, used and manufactured within it.

Forty-two samples were collected from AEC 5, including one duplicate. Ten samples were analyzed for VOCs, 34 for B/Ns, 6 for AEs, 36 for PCBs, 3 for metals, and 11 for PHCs. Soil analytical results for the Ester II building and vicinity are shown on Figures 6.2-1 through 6.2-7 and for the transfer station, Figures 6.3-1 through 6.3-7. These data are listed on Tables 6.2-11 through 6.2-16.

6.2.3.1 Surface

Volatile Organic Compounds. TVOCs were detected in 3 samples at concentrations ranging from 0.01 ppm in Sample 116/1.5-2' to 0.63 ppm in Sample A18/1.5-2'. NTVOCs were found in all 4 samples at levels ranging from 0.02 ppm in Sample 116/1.5-2' to 0.62 ppm in Sample G29/1.5-2'. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. TB/Ns were found in all 26 samples analyzed at concentrations ranging from 0.11 ppm in Sample 146/0-0.5' to 43,023 in Sample SE1/0-0.5'. NTB/Ns were detected in 25 samples at levels ranging from 0.18 ppm in Sample DD18/1.5-2' to 2,850 ppm in Sample SE1/0-0.5'.

DEHP was the only B/N compound found above the SCC of 100 ppm (Figure 6.2-2 and Table 6.2-12). DEHP exceedances ranged from 420 ppm at sample location G20/1.5-2' at the southwest corner of AEC 5 to 43,000 ppm in Sample SE1/0-0.5', collected from within the former seepage trench east of the railroad siding. DEHP exceedances were detected primarily along the western border of AEC 5, including one within the bermed area of the tank farm.

AEs were found in 3 samples at concentrations ranging from 0.12 ppm in Sample H16.5/1.5-2' to 0.82 ppm in Sample G16/1.5-2'. All detected AE compounds were below their respective SCCs.

Polychlorinated Biphenyls. PCBs were detected in 24 soil samples. PCB exceedances, mainly Aroclor 1248, were found in 10 samples at concentrations ranging from 2.07 ppm in Sample A/F19/0-0.5' to 150 ppm in Sample H16.5/0-0.5' (Figure 6.2-3 and Table 6.2-14). PCB exceedances, like B/N exceedances, were detected along the western border of AEC 5 and within the bermed area of the tank farm. In addition, PCB exceedances were found in one sample at the northeast corner and 5 samples from within the transfer station.

Metals and Petroleum Hydrocarbons. Arsenic exceedances were detected at 2.4 ppm in Sample F18/0-0.5' and 4.3 ppm in Sample A17/0-0.5 (Figure 6.2-4 and Table 6.2-15). PHCs were found below the SCC in all 8 samples at concentrations ranging from 24 ppm in Sample 157/0-0.5' to 310 ppm in Sample 115/0-0.5'.

6.2.3.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in all 6 samples analyzed at levels ranging from 0.02 ppm in Sample 115/4.5-5' to 21.38 ppm in Sample A18.5/4'. NTVOCs were found in 5 samples at concentrations ranging from 0.01 ppm in Sample DD16/4' to 9.9 ppm in Sample A18.5/4'. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 7 samples at concentrations ranging from 0.03 ppm in Sample DD16/8' to 2,400 ppm in Sample A/F19/6'. NTB/Ns were detected in all 8 samples at levels ranging from 2.09 ppm in Sample 130/5.5-6' to 860 ppm in Sample A/F19/6'.

DEHP was the only B/N exceedance detected (Figure 6.2-6). Analysis of Sample A/F19/6', collected from within the southwest corner of the bermed area of the tank farm, revealed a DEHP exceedance of 2,400 ppm.

AEs were not detected in the one sample analyzed (A/F 19/6').

Polychlorinated Biphenyls. PCBs were detected in 7 soil samples. In only Sample DD16/6' did PCBs slightly exceed the SCC at a concentration of 2.01 ppm.

Petroleum Hydrocarbons. PHC concentrations ranged from 7 ppm in Sample 116/3-3.5' to 12 ppm in Sample 146/6-6.5'. All PHCs were found below the SCC.

6.2.3.3 Summary

Elevated concentrations of DEHP and PCB Aroclor 1248 have impacted AEC 5 predominantly at the surface. These exceedances run along the western border south of the Ester II building. One DEHP "hot spot" was found at a depth of 6 feet bg within the tank farm at the southwest corner of the bermed area. In addition, elevated PCBs were detected east and south of the transfer station; their presence may be due to the close proximity of this area to AEC 2. The two arsenic exceedances are of low environmental concern.

VOCs and PHCs have not impacted AEC 5.

6.2.4 AEC 11B - Salt USTs

AEC 11B consists of two salt underground storage tanks (USTs). These tanks contain a salt solution used in manufacturing at the Ester I process building.

Three samples were obtained from AEC 11B; 2 were analyzed for PCBs, and 1 for sodium and chloride (Figures 6.2-3 and 6.2-4; Tables 6.2-17 and 6.2-18).

6.2.4.1 Surface and Subsurface

In AEC 11B, PCBs were only detected in Sample HH4.5/0-0.5' at a concentration of 0.22 ppm, below the SCC.

Analysis of Sample HH4.5/6' revealed sodium and chloride concentrations of 449 and 440 ppm, respectively. As of January 19, 1993, there are no SCCs for these compounds.

6.2.4.2 Summary

AEC 11B has not been impacted by PCBs. Therefore, it is of low environmental concern.

6.2.5 AEC 12 - Transformers

This AEC consists of seven transformer locations. The transformers have been previously investigated; only two of the smaller units were found to contain PCBs above the level of 50 ppm. The type of PCBs detected in the two transformers is Aroclor 1260, which has not been reported in previous site soil or ground water sample analysis. Heat-transfer fluids containing PCBs once used in these transformers were drained out and replaced with another type of non-PCB heat-transfer liquid.

The seven transformer areas are located at: (1) the electric substation (Figures 6.3-1 through 6.3-7); (2) within AEC 6 and adjacent to the current drum and waste storage area (AEC 10A); (3) east of the Acid Tank Farm (AEC 4) (Figures 6.2-1 through 6.2-7); (4) north of the Acid Tank Farm; (5) within and along the eastern border of the ZAA Process Area (AEC 19); (6) within the Alcohol Tank Farm (AEC 9B) (Figures 6.6-1 through 6.6-7); and (7) adjacent to the Finance and Administration building.

Nineteen soil samples were collected from AEC 12. 8 samples were analyzed for B/Ns, 18 for PCBs, and 7 for PHCs. VOC analysis was not requested for any of the samples. Soil analytical results are listed on Tables 6.2-19 through 6.2-21.

6.2.5.1 Surface and Subsurface

At the surface, TB/Ns were detected in 3 samples; 1.2 ppm in Sample 103/1-1.5', 4.28 ppm in Sample G4.5/1.5-2' and 13.83 ppm in Sample MW14s/1.5-2'. NTB/Ns were only found in Sample 131/6-6.5' at a concentration of 14.16 ppm.

All detected TB/Ns were below their SCCs in surface soils. No TB/Ns were found in the two samples collected from the subsurface (MW14s/13.5-14' and 131/6-6.5').

At the surface, PCBs were detected in 6 samples; in 5 samples, PCB levels, mostly Aroclor 1254, exceeded the Impact to Ground Water SCC of 2 ppm. PCB exceedances (Aroclors 1248 and 1254), within the electric substation, were detected at 4.1 ppm in Sample CC4.5/0-0.5' and at 5.4 ppm in Sample 152/0-0.5' (Figure 6.3-4 and Table 6.2-20). In addition, in Sample MW14s/1.5-2', within 70 feet downgradient of AEC 12, PCBs were found at 9.2 ppm. The remaining two exceedances, both of Aroclor 1254, were detected at concentrations of 8.2 ppm at sample location 140/0-0.5', east of Ester I and 15 ppm at sample location 138/0-0.5', north of Ester I (Figure 6.2-4).

PCB exceedances were not detected in subsurface soils.

In surface soils, PHCs were detected in all 7 samples analyzed at concentrations ranging from 6.5 ppm in Sample 103/1-1.5' to 10,000 ppm in Sample 140/0-0.5'. In subsurface soils, PCBs were found at 12 ppm in Sample 131/6-6.5'. All PHC concentrations were detected at or below the SCC.

6.2.5.2 Summary

PCBs have impacted surface soils within and downgradient of the electric substation and at the transformer locations north and east of Ester I. Although PCB Aroclor 1260 was detected in previous sampling (Environ and DRAI, 1987) it was not detected or identified during the RI sampling. VOCs, B/Ns and PHCs have not impacted AEC 12.

6.2.6 AEC 19 - ZAA Process Area

AEC 19 consists of the z-aspartic acid (ZAA) process area. This AEC was the location of the former benzyl chloride manufacturing facility. Currently, the ZAA facility uses benzyl chloroformate, l-aspartic acid and caustic to make ZAA, an intermediate product of aspartame.

21 soil samples, including one duplicate, were collected from this AEC. 7 samples were analyzed for VOCs, 11 for B/Ns; 2 for AEs; and 21 for PCBs. Soil analytical results are shown on Figures 6.2-1 through 6.2-7 and listed on Tables 6.2-22 through 6.2-25.

6.2.6.1 Surface

Semi-Volatiles. TB/Ns were detected in 6 samples at concentrations ranging from 0.08 ppm in Sample A13/1.5-2' to 1,522 ppm in Sample G13/0-0.5'. NTB/Ns were found in 7 samples at levels ranging from 1.94 ppm in Sample A13/1.5-2' to 414 ppm in Sample G13/0-0.5'.

The only TB/N exceedance detected was DEHP at 140 ppm at sample locations A11/0-0.5' (north and adjacent to the ZAA process area) and F13/0-0.5' (at the center of the ZAA process area, Figure 6.2-2 and Table 6.2-23). Analysis of Samples G13/0-0.5' and G14/1.5-2', from locations southwest and downgradient of the ZAA process area, detected DEHP exceedances of 1,500 and 1,400 ppm; respectively.

AEs were not found in the two samples analyzed (A11/0-0.5' and F11/0-0.5').

Polychlorinated Biphenyls. PCB exceedances were detected in Samples G13/0-0.5', A11(A)/0-0.5', A11(B)/0-0.5' and F11/0-0.5' at concentrations of 74, 110, 110 and 310 ppm, respectively (Figure 6.2-3 and Table 6.2-25). The latter three samples were collected during March 1988. In September 1992, analysis of additional samples from locations A11/0-0.5' and F11/0-0.5' revealed PCB concentrations of 1 and 0.09 ppm, respectively. These levels are below the SCC.

6.2.6.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in all 7 samples analyzed at concentrations ranging from 0.03 ppm in Samples F13/6' and F13/8' to 217.6 ppm in Sample G14/6'. NTVOCs were found in 6 samples at levels ranging from 0.01 ppm in Sample F13/8' to 42.1 ppm in Sample G14/6'.

Southwest and downgradient of the ZAA process area 1,1-DCA and 1,1,1-TCA exceedances were detected in Sample G14/6' at concentrations of 38 and 150 ppm, respectively (Figure 6.2-5). There were no other TVOCs exceedances in AEC 19.

Semi-Volatiles. TB/Ns were detected in all 3 samples analyzed at concentrations of 0.08 ppm (Sample F13/8'), 239.5 ppm (Sample F13/4') and 9,265 ppm (Sample G14/6'). NTB/Ns were only found in Samples F13/4' and G14/6' at concentrations of 105.3 and 439 ppm, respectively.

DEHP was the only TB/N exceedance detected (Figure 6.2-6). At sample locations F13/4' and G14/5' in the southwest corner of the ZAA process area, DEHP exceedances were found at concentrations of 210 and 9,200 ppm; respectively.

Polychlorinated Biphenyls. PCB concentrations slightly exceeded the SCC in only 2 samples. In analysis of Samples A11/4' and A11/3.5-4' PCB exceedances at concentrations of 3.8 and 3.9 ppm, respectively, were detected (Figure 6.2-7).

6.2.6.3 Summary

In surface and subsurface soils "hot spots" of DEHP and, to a lesser extent, PCBs have impacted AEC 19 to depths of 4 to 5 feet bg. Most of the PCB exceedances were found north of the ZAA process area adjacent to AEC 4. 1,1-DCA and 1,1,1-TCA impacted AEC 19 to depths of 6 feet bg southwest and downgradient of the ZAA process area.

6.3 Region III

6.3.1 AEC 6 - Former PA Process Area

AEC 6 is the former phthalic anhydride process area. The original process unit was constructed in approximately 1961 with a second unit added in approximately 1963. The first unit produced phthalic anhydride, using naphthalene as the feed, while generating distillation bottoms containing acenaphthylene, pyrene, phenanthrene, isophorone and others. The second unit purified coal-tar derived feed; this process produced residues containing

picolines, quinoline, phenol and cresols. The operation of the two phthalic anhydride manufacturing units was discontinued in approximately 1971.

Thirty-two soil samples, including one duplicate, were collected from AEC 6; 4 soil samples were analyzed for VOCs, 27 for B/Ns, 10 for AEs, 17 for PCBs, 6 for metals, and 16 for PHCs. Soil analytical results are shown on Figures 6.3-1 through 6.3-7 and listed on Tables 6.3-1 through 6.3-6.

6.3.1.1 Surface

Volatile Organic Compounds. TVOCs were not detected in the only surface sample (126/1-1.5') analyzed. NTVOCs were found at 3.9 ppm.

Semi-Volatiles. TB/Ns were detected in 13 samples at concentrations ranging from 1.2 ppm in Sample T24/1.5-2' to 231.1 ppm in Sample S28/0-0.5'. NTB/Ns were found in 13 samples at levels ranging from 0.92 ppm in Sample S/T24/1.5-2' to 128 ppm in Sample S24/0-0.5'.

DEHP and DBP were the only B/N compounds detected above their SCC of 100 ppm (Figure 6.3-2 and Table 6.3-2). DEHP and DBP exceedances were observed at sample locations 128/0-0.5' (130 ppm), within 50 feet southwest of AEC 6 and S28/0-0.5' (190 ppm) at the southeast corner of AEC 6. AEs were only detected in Sample T/U26/1.5-2' at a concentration of 0.15 ppm, which is below the SCC.

Polychlorinated Biphenyls. PCBs, mostly Aroclor 1248, were detected in 6 surface samples. In 4 of these samples, concentrations exceeded the SCC of 2 ppm (Figure 6.3-3 and Table 6.3-4). PCB exceedances ranged from 2.9 ppm in Sample U25/0-0.5' to 51 ppm in Sample T24/0-0.5'.

Metals and Petroleum Hydrocarbons. Arsenic was detected slightly above the SCC of 2 ppm at concentrations of 2.4 ppm in Sample S/T24/1.5-2' and 2.7 ppm in Sample T/U26/1.5-2' (Figure 6.3-4 and Table 6.3-5). PHCs were detected in all 11 samples at concentrations ranging from 66 ppm in Samples T24/1.5-2' and S24/0-0.5' to 2,900 ppm in Sample S28/0-0.5'. All PHCs were found below the SCC.

6.3.1.2 Subsurface

Volatile Organic Compounds. TVOCs were only detected in 2 samples. TVOCs and NTVOCs were found in Sample T24/10-10.5' at 0.34 and 0.21 ppm, respectively. TVOCs and NTVOCs were found in Sample U26/8-8.5' at concentrations of 0.01 and 0.11 ppm, respectively. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 7 samples at concentrations ranging from 0.94 ppm in Sample U26/4-4.5' to 514.64 ppm in Sample S26/2-2.5'. NTB/Ns were detected in 8 samples at levels ranging from 0.33 ppm in Sample S/T26/8' to 342 ppm in Sample T24(A)/4-4.5'.

There were no B/N exceedances or AEs detected in subsurface soils at AEC 6.

Polychlorinated Biphenyls. In AEC 6, PCBs were not detected in the 3 subsurface samples analyzed.

Petroleum Hydrocarbons. All PHCs were found below the SCC at concentrations ranging from 16 ppm in Sample 126/5-5.5' to 4,500 ppm in Sample S26/2-2.5'.

6.3.1.3 Summary

AEC 6 has been slightly impacted by B/Ns and PCBs at the surface. The two "hot spots" of B/Ns may be attributable to activities performed in other AECs since both sample locations are not within, but adjacent to, AEC 6. The four PCB exceedances are evenly distributed throughout AEC 6. Subsurface soils in this area have not been impacted by VOCs, B/Ns or PCBs and are of low environmental concern.

6.3.2 AEC 9C - Naphthalene Tank Farm

AEC 9C consists of the naphthalene tank farm located in the center of the site. Forty-three samples, including 4 duplicates, were collected from AEC 9C. Five samples were analyzed for VOCs, 36 for B/Ns, 3 for AEs, 42 for PCBs, 8 for metals, and 6 for PHCs. Soil analytical results are shown on Figures 6.3-1 through 6.3-7 and listed on Tables 6.3-7 through 6.3-12.

6.3.2.1 Surface

Semi-Volatiles. TB/Ns were detected in 23 samples at concentrations ranging from 0.2 ppm in Sample DD10/1.5-2' to 27,060 ppm in Sample I43/0-0.5'. NTB/Ns were also found in 23 samples at levels ranging from 0.76 ppm in Sample FF11/0-0.5' to 7,777 ppm in Sample 154/0-0.5'.

DEHP, naphthalene and DBP were detected above the SCC of 100 ppm (Figure 6.3-2 and Table 6.3-8). DEHP exceedances were found in five samples at concentrations ranging from 220 ppm (duplicate 1,060 ppm) in Sample GG12/0-0.5' to 27,000 ppm in Sample 143/0-0.5'. Naphthalene exceedances were detected in 5 samples at levels ranging from 110 ppm in Sample 145/0-0.5' to 21,000 ppm in Sample 142/0-0.5'. DBP was only found in Sample 154/0-0.5' at a concentration of 200 ppm.

Most of the TB/N exceedances were found within the bermed areas of the naphthalene tanks. Sample location GG12/0-0.5', at the west perimeter of AEC 9C, was the only area where TB/N exceedances were detected outside the bermed area.

AEs were not found in the 2 samples analyzed (E13/1.5-2' and U28/1.5-2').

Polychlorinated Biphenyls. PCBs were detected in 18 samples; in 6 samples the SCC of 2 ppm was exceeded. PCB exceedances, predominantly Aroclor 1248, ranged from 2.76 ppm (duplicate 1.56 ppm) in Sample C11/0-0.5' to 18 ppm in Sample 154/0-0.5'. As with TB/Ns, PCB exceedances were generally found within the bermed areas of the tanks (Figure 6.3-3 and Table 6.3-10).

Metals and Petroleum Hydrocarbons. Arsenic, beryllium and zinc were detected at concentrations exceeding the SCCs of 2, 1 and 1,500 ppm; respectively (Figure 6.3-4 and Table 6.3-11). Arsenic was found at 2.2 ppm in Sample DD12/0-0.5', 2.3 ppm in Sample U28/1.5-2' and 5.5 ppm in Sample E9(A)/0-0.5'. Analysis of Sample U28/1.5-2' revealed beryllium and zinc concentrations of 3.1 and 2,780 ppm; respectively. This sample was collected from the northeast

corner of AEC 9C, upgradient of the tanks. One PHC exceedance was detected, at Tank M-1-A, in Sample 154/0-0.5' at 37,000 ppm.

6.3.2.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in 3 soil samples at concentrations of 0.02 ppm in Sample DD10/6', 0.04 ppm in Sample E13/6' and 73 ppm in Sample E10/6'. NTVOCs were also found in 3 samples at 0.03 ppm in Sample DD10/6', 0.12 ppm in Sample MW18s/7-7.5' and at 40 ppm in Sample E10/6'. All TVOCs detected were below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 10 samples at concentrations ranging from 0.07 ppm in Sample CC13/8' to 2,200 ppm in Sample E10/4'. NTB/Ns were detected in 8 samples at levels ranging from 0.82 ppm in Sample DD10/4' to 31 ppm in Sample U28/4'.

DEHP was the only TB/N found above the SCC of 100 ppm (Figure 6.3-6). DEHP was detected at 2,200 ppm in Sample E10/4'. At the 8-foot interval, DEHP was found at 0.55 ppm, below the SCC. This sample location is within the bermed area of naphthalene tank M-1-A.

AEs were not detected in the one sample analyzed (Sample E13/8').

Polychlorinated Biphenyls. PCBs were found in 3 samples at concentrations of 0.01 ppm in Sample CC13/6', 0.02 ppm in Sample CC13/4' and 0.96 ppm in Sample E11/6-6.5'. All detected PCBs were below the SCC in subsurface soils.

6.3.2.3 Summary

At the surface, elevated concentrations of B/Ns and PCB Aroclor 1248 have impacted AEC 9C. PHCs, arsenic, beryllium and zinc "hot spots" have also been found at the surface. In subsurface soils, one DEHP "hot spot" was detected at Tank M-1-A.

VOCs have not impacted AEC 9C.

6.3.3 AEC 10A - Current Drum and Waste Storage Area

AEC 10A, located within the northwest corner of AEC 6, is the current drum and waste storage area. Eight soil samples, including one duplicate, were collected from this area. A total of 6 samples was analyzed for B/Ns, 3 for AEs, 4 for PCBs, 2 for metals, and 3 for PHCs. Soil analytical results are shown on Figures 6.3-1 through 6.3-7 and listed on Tables 6.3-13 through 6.3-17.

6.3.3.1 Surface and Subsurface

Semi-Volatiles. TB/Ns, at the surface, were only found in Samples T/U24/1.5-2' and 129/0-0.5' at concentrations of 0.49 and 43.2 ppm, respectively. NTB/Ns were detected in all 3 samples analyzed at concentrations of 1.14 ppm (Sample U24/1.5-2'), 3.67 ppm (T/U24/1.5-2') and 225 ppm (Sample 129/0-0.5'). TB/N exceedances and AEs were not detected in surface soils.

TB/Ns were found in the subsurface soils in all 3 samples analyzed. In Samples T/U24/4', T/U24/12' and T/U24/8', TB/N concentrations of 0.02, 0.53 and 3.97 ppm, respectively, were detected. NTB/Ns were also found in all 3 samples at concentrations of 4.62 ppm (T/U24/4'), 7.28 ppm (Sample T/U24/8') and 22.6 ppm (T/U24/12'). There were no B/N exceedances or AEs detected.

In AEC 10A, PCBs were detected in one surface sample. Analysis of Sample T/U24/1.5-2' revealed a PCB concentration of 0.9 ppm, which is below the SCC. PCBs were not detected in subsurface soils.

Metals and Petroleum Hydrocarbons

In surface soils, all metals in the one sample analyzed were found either at or below their respective SCCs. PHCs were detected in all 3 surface samples analyzed; however, only one concentration exceeded the total organic compound SCC of 10,000 ppm. Analysis of Sample 129/0-0.5' revealed a PHC exceedance of 30,000 ppm (Figures 6.3-4 and Table 6.3-16). Metals and PHC analyses were not requested for subsurface samples collected from this area.

6.3.3.2 Summary

Only one PHC "hot spot" was found. This exceedance was detected at the surface within 25 feet south of AEC 10A. VOCs, B/Ns, PCBs and metals have not impacted AEC 10A. This area is considered to be of low environmental concern.

6.4 Region IV

6.4.1 AEC 7A - PA Residue Area

AEC 7A is comprised of the phthalic anhydride residue area also referred to in past reports as the K024 area. This section is located east and south of the former phthalic anhydride manufacturing facility. The distillation bottoms from the phthalic anhydride process were disposed of in this area. Analytical results for soil samples collected from AEC 7A during March 1988 indicate the presence of naphthalene and K024, an EPA-listed hazardous waste (Figures 6.4-1 through 6.4-7 and Tables 6.4-1 through 6.4-6). Approximately 18,000 cubic yards of soil were excavated within this area between July 12 and August 11, 1988. Post-excavation sampling was conducted in September 1989 and July and September 1992.

6.4.1.1 Post-excavation Sampling Results

September 1989. On September 13 and 14, 1989, post-excavation sampling was conducted in AEC 7A to confirm removal of contaminated soil. Soil samples were collected by a hand auger at 18 locations in the natural clay at the base of the excavation. Samples B-1 through B-12 were obtained from a depth of 8 to 10 feet bg, and Samples B13 through B18 from grade to 5 feet below. In addition, 21 soil samples were collected at 50-foot intervals from the natural soil occurring in the sidewalls of the excavation to verify the horizontal integrity of the cleanup. Fifteen of the sidewall samples (S-1 through S-15) were obtained at the interface of the clay and overlying soil. The remaining six (S-16 through S-21) were collected at selected locations higher up on the sidewalls.

All soil samples were analyzed for B/Ns. All sidewall soil samples were also analyzed for PCBs. Soil analytical results are shown on Figure 6.4-8 and listed on Tables 6.4-7 through 6.4-8.

TB/N concentrations, at the base of the area excavated from 8 to 10 feet bg, ranged from 3.59 ppm in Sample B-10 to 1,450 ppm in Sample B-6. Naphthalene was the only TB/N exceedance detected at concentrations of 120 ppm (Sample B-12); 380 ppm (Sample B-2); 310 ppm (Sample B-5) and 1,400 ppm (Sample B-6).

TB/N concentrations in the base samples from the 0 to 5-foot excavation ranged from 0.35 ppm in Sample B-14 to 135.77 ppm in Sample B-13. DBP was the only TB/N exceedance detected. Analysis of Sample B-13 revealed a DBP concentration of 120 ppm.

TB/N concentrations in sidewall samples at the 8 to 10-foot excavation ranged from 11.32 ppm in Sample S-2 to 4,215 ppm in Sample S-5. Naphthalene, DEHP and DBP were detected at concentrations exceeding their respective SCCs. Naphthalene was found at 880 ppm in Sample S-7; 970 ppm in Sample S-6 and 4,000 ppm in Sample S-5; all of these locations are in the northwest corner of the excavation. DEHP exceedances, all at the eastern side of the excavation, were detected at 120 ppm in Sample S-12, 170 ppm in Sample S-13 and 270 ppm in Sample S-11.

At the sidewalls of the 0 to 5-foot excavation, only DBP and naphthalene were found at concentrations exceeding their respective SCCs. DBP and naphthalene were detected in Sample S-18 at concentrations of 750 and 670 ppm, respectively. DBP exceedances were reported at 140 ppm in Sample S-6 and at 200 ppm in Sample S-5.

NTB/Ns at both excavations ranged from 0.93 ppm in Sample B-14 to 3,260 ppm in Sample S-18. The latter sample was collected from the southwest corner of the 0 to 5-foot excavation.

PCB exceedances were detected in 23 sidewall samples. These exceedances ranged from 3.1 ppm in Sample S-9, collected from the northeast corner of the 8 to 10-foot excavation, to 90 ppm in Sample S-18.

July and September 1992. In July 1992, during the installation of well MW13s, two soil samples were collected within 25 feet south of AEC 7A at sample intervals 1.5 to 2 feet and 12.5 to 13 feet. Both samples were analyzed for B/Ns and PCBs. In addition, during the RI field work, three samples were collected from sample location R22 at 1.5 to 2, 4 and 8 feet bg. All three samples were analyzed for B/Ns. Samples R22/1.5-2' and R22/8' were additionally analyzed for metals.

TB/Ns were detected in 4 samples at concentrations ranging from 0.04 ppm in Sample R22/4' to 7.11 ppm in Sample R22/1.5-2' (Figures 6.4-2 and 6.4-6; Table 6.4-7). NTB/Ns were found in all 5 samples at concentrations ranging from 0.13 ppm in Sample R22/8' to 3.44 ppm in Sample MW13s/1.5-2'. All TB/Ns detected were below their respective SCCs. PCBs were only found in one sample (MW13s/1.5-2') at a concentration of 0.17 ppm, below the SCC. Analysis of Sample R22/1.5-2' revealed an arsenic concentration of 2.2 ppm, only slightly exceeding the SCC of 2 ppm (Figure 6.4-4 and Table 6.4-9).

6.4.1.2 Summary

At the 8 to 10-foot excavation, generally all sidewalls were impacted by B/Ns and PCBs. Naphthalene impacted the north and northwest sidewalls in areas adjacent to the naphthalene disposal area, and elevated DEHP concentrations impacted the east sidewall. The base of the excavation was only slightly impacted by DEHP in the southeast corner and by naphthalene near the west sidewall.

At the 0 to 5-foot excavation interval, all sidewalls were predominantly impacted by PCBs. The most elevated PCB levels were concentrated in the southwest sidewall of the excavation. Only one "hot spot" of B/Ns was detected. An elevated DBP concentration was reported in the southwest corner. The base of this excavation was only slightly impacted by DEHP at the center.

Based on the 1992 analytical results, only a slight exceedance of arsenic was detected.

6.4.2 AEC 9E - No. 6 Fuel Oil Tank Area

AEC 9E consists of the aboveground No. 6 fuel oil tank area situated behind the maintenance building. 3 soil samples were collected from this area and analyzed for B/Ns and PCBs. One sample was additionally analyzed for AEs. Soil analytical results are shown on Figures 6.4-1 through 6.4-7 and listed on Tables 6.4-10 through 6.4-12.

6.4.2.1 Surface and Subsurface

Semi-Volatiles. TB/Ns and NTB/Ns were found in all 3 samples analyzed. TB/N concentrations were 0.68 ppm in Sample FF4/8', 24.57 in Sample FF4/0-0.5' and 26.07 ppm in Sample FF4/4'. NTB/N concentrations were 36.9, 100.2 and 5.24 ppm in the respective samples.

TB/N exceedances and AEs were not detected.

Polychlorinated Biphenyls. PCBs were detected below the SCC in all 3 samples analyzed. PCBs were found at 0.04 ppm in Sample FF4/4', 0.25 ppm in Sample FF4/0-0.5' and 0.34 ppm in Sample FF4/8'.

6.4.2.2 Summary

B/Ns, AEs and PCBs have not impacted AEC 9E. Therefore, this area is considered to be of low environmental concern.

6.4.3 AEC 10B - Former Drum and Waste Storage Area North of Warehouse No. 5

AEC 10B consists of former drum and waste storage areas. Based on aerial photographs from 1966 through 1990, facilities that appear to be drum storage areas are visible at the Hatco site. There are no apparent drum storage areas in the photographs from 1939 to 1961, or in the 1987 photograph. In the 1966, 1967 and 1969 photographs, drum storage in the field on the northern portion of the site (north of Warehouse No. 5) is evident.

Sixty samples were collected from AEC 10B, including 6 duplicates. Fifteen samples were analyzed for VOCs, 53 for B/Ns, 18 for AEs, 37 for PCBs, 4 for metals, and 14 for PHCs. Soil analytical results are shown on Figures 6.4-1 through 6.4-7 and listed on Tables 6.4-13 through 6.4-18.

6.4.3.1 Surface

Volatile Organic Compounds. TVOCs were detected in 2 samples at 0.01 ppm in Sample 135/1.5-2' and 0.25 ppm in Sample 133/1.5-2'. NTVOCs were found in 3 samples at concentrations of 0.01 ppm in Sample 135/1.5-2', 0.11 ppm in Sample 134/1.5-2' and 2.94 ppm in Sample 133/1.5-2'. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. TB/Ns were detected in 18 samples at concentrations ranging from 0.01 ppm in Sample CC3(B)1.5-2' to 188.6 ppm in Sample 134/0-0.5'. NTB/Ns were found in 23 samples at levels ranging from 0.52 ppm in Sample Z3/0-0.5' to 516.8 ppm in Sample 134/0-0.5'.

DEHP was the only TB/N exceedance detected. Analysis of Sample CC3.5/0-0.5', collected from the west side of AEC 10B within 100 feet north of the electric substation, revealed a DEHP concentration of 120 ppm (Figure 6.4-2 and Table 6.4-14).

AEs were only detected at Sample Z4/0-0.5' at a concentration of 0.03 ppm. This level is below the SCC.

Polychlorinated Biphenyls. PCB exceedances were detected in 6 samples, including 4 samples from the northwest corner of AEC 10B. These exceedances ranged from 4.6 ppm at sample location AA3.5/0-0.5' in the center to 62 ppm at sample location 134/0-0.5' in the northwest corner. One PCB exceedance was found in the upper southeast corner at a concentration of 6.1 ppm (Sample Y4.5/1.5-2') (Figure 6.4-3 and Table 6.4-16).

Metals and Petroleum Hydrocarbons. Arsenic exceedances were detected in Samples BB3.5/1.5-2' and CC4/1.5-2' at concentrations of 3.4 and 3.7 ppm, respectively, (Figure 6.4-4 and Table 6.4-17). PHCs were found below the SCC in all 8 samples analyzed at concentrations ranging from 5.9 ppm in Sample 135/0.5-1' to 230 ppm in Sample 136/0.5-1'.

6.4.3.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in 8 samples at levels ranging from 0.01 ppm at 4 sample locations along the eastern border to 0.16 ppm in Sample AA3.5/12'. NTVOCs were found at levels ranging from 0.02 ppm at 3 locations to 0.06 ppm in Sample 135/5-5.5'. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 17 samples at concentrations ranging from 0.03 ppm in Sample CC3.5/8' to 1.76 ppm in Sample AA3.5/12'. NTB/Ns were detected in 18 samples at levels ranging from 0.54 ppm in Sample CC3.5/12' to 7.94 ppm in Sample FD4/6.5'.

TB/N exceedances and AE compounds were not detected in the subsurface soils of AEC 10B.

Polychlorinated Biphenyls. PCBs were found in 8 samples at levels ranging from 0.02 ppm in Sample FF3/10' to 1.8 ppm in Sample 133/4-4.5'. All detected PCBs were below the SCC of 2 ppm.

Metals and Petroleum Hydrocarbons. All metals were detected below their respective SCCs. PHCs were found below the SCC in all 6 samples at concentrations ranging from 6.5 ppm in Sample 135/5-5.5' to 65 ppm in Sample 136/4.5-5'.

6.4.3.3 Summary

Generally, elevated concentrations of PCBs and one "hot spot" of DEHP have impacted AEC 10B at the surface, in the northwest corner. At the center and at the southeast corner, one "hot spot" each of PCBs was found at the surface. The arsenic exceedances detected are insignificant due to their low concentrations. Subsurface soils have not been impacted.

VOCs and PHCs have not impacted AEC 10B.

6.4.4 AEC 11A - Maintenance Building UST

AEC 11A consists of an UST area located north of the maintenance building. No documentation exists for the gasoline USTs located behind the maintenance building, because all are believed to have been excavated before the enactment of any UST regulations.

All 5 samples collected from AEC 11A were analyzed for VOCs, B/Ns and PHCs (Figures 6.4-1 through 6.4-7; Tables 6.4-19 through 6.4-21).

6.4.4.1 Surface and Subsurface

TVOCs were only detected in Sample E4/1.5-2' at a concentration of 0.01 ppm. NTVOCs were not found. TB/Ns were only detected in Samples E4/1.5-2' and E4/6' at concentrations of 0.03 and 0.75 ppm, respectively. NTVOCs were found in Samples E4(B)/4' and E4/6' at concentrations of 1.45 and 0.7 ppm, respectively. PHCs were detected in Sample E4/1.5-2' at a concentration of 88 ppm. Analysis of all other samples revealed PHC concentrations of less than 25 ppm.

6.4.4.2 Summary

In AEC 11A, all TVOC, TB/N and PHCs were detected below their respective SCCs. Therefore, AEC 11A has not been impacted by these compounds and is of low environmental concern.

6.4.5 AEC 14 - Naphthalene Area

The naphthalene area is located immediately north of the phthalic anhydride residue area. AEC 14 was formerly used for naphthalene disposal during the operation of the second phthalic anhydride unit. It is estimated that approximately 1,500 to 2,000 cubic yards of material containing naphthalene waste was placed in this area. To date, soil remediation has not taken place.

On August 14, 1988 and September 27, 1989 six trenches were excavated in this area to determine the horizontal and vertical extent of material containing naphthalene residue. Results of these subsurface investigations are provided in Appendix F-3 of the draft RI work plan (DRAI, August 1992).

During the RI field work in September 1992, 3 samples were collected at the center of AEC 14 at sample location Z/R4.75. All 3 samples were analyzed for B/Ns and PCBs, and one for AEs (Figures 6.4-2 through 6.4-7; Tables 6.4-22 through 6.4-24).

TB/Ns were detected at 0.16 ppm at 6 feet bg, 0.09 ppm at 10 feet bg and 0.34 ppm at 14 feet bg. NTB/Ns were only found at the 6- and 14-foot intervals at concentrations of 15.08 and 0.15 ppm, respectively. AEs were not detected in the one sample analyzed (Z/R4.75/6'). All TB/Ns detected were below their respective SCCs (Table 6.4-22).

PCBs were only found at the 10-foot interval at 0.02 ppm (Table 6.4-24); this level is below the SCC.

Summary. No B/Ns, AEs or PCBs were detected in the one sample taken at the center of AEC 14. However, based on results of previous subsurface investigations during 1988 and 1989, possible evidence of naphthalene was observed in subsurface soils. Therefore, the horizontal and vertical extent of potential impact within this entire area has not been determined.

6.5 Region V

6.5.1 AECs 8 and 13 - Tarry and Southeast Fill Areas

AEC 8 is the tarry area, located on the southeast corner of the site adjacent to Industrial Avenue. A tar-like substance found in the subsurface soil is believed to be road construction waste generated from the construction of Industrial Avenue.

AEC 13 is the southeast (S.E.) fill area, which is located south of the phthalic anhydride residue area but north of the tarry area. AEC 13 has not been used for any manufacturing operation in the past, but random dumping of solid waste has occurred. The materials dumped are typically wastes from the construction of Industrial Avenue (i.e., concrete, wood).

Seventeen soil samples was collected from AEC 8. Two samples were analyzed for VOCs, 16 for B/Ns, 5 for AEs, 15 for PCBs, and 4 for PHCs. In AEC 13, 42 soil samples were collected, including 4 duplicates. Fifteen samples were analyzed for VOCs, 35 for B/Ns, 3 for AEs, 23 for PCBs, 7 for metals, and 16 for PHCs. Soil analytical results are shown on Figures 6.5-1 through 6.5-7. These data are listed on Tables 6.5-1 through 6.5-5 for AEC 8 and 6.5-6 through 6.5-11 for AEC 13.

6.5.1.1 Surface

Volatile Organic Compounds. TVOCs in both AECs 8 and 13 were detected in 3 samples. NTVOCs were found in 7 samples. TVOCs were detected at 0.004 ppm in Sample 117/1.5-2' (AEC 8), 0.02 ppm in Sample 122/1.5-2' (AEC 13) and 0.01 ppm in Sample 119/1.5-2' (AEC 13). NTVOCs concentrations ranged from 0.004 ppm in

Sample 119/1.5-2' to 0.07 ppm in Sample 120/1-1.5', both of which were collected from AEC 13. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. In AEC 8, TB/Ns were detected in all 10 samples at concentrations ranging from 0.1 ppm in Sample 148/0-0.5' to 7,325 ppm in Sample S/T31.75/1.5-2'. NTB/Ns were also found in all 10 samples at levels ranging from 1.67 ppm in Sample 148/0-0.5' to 650 ppm in Sample S/T31.75/1.5-2'.

DEHP, naphthalene and BBP were the only B/N compounds detected above the SCC of 100 ppm (Figure and Table 6.5-2). DEHP was found at 540 ppm in Sample S/T31.75/1.5-2' (AEC 8) and at 700 ppm in Sample S/T32/1.5-2' (AEC 8). Naphthalene was detected at 1,600 ppm in Sample S/T32/1.5-2' and at 6,600 ppm in Sample S/T31.75/1.5-2'. In the latter sample, BBP was also found at a concentration of 130 ppm.

All TB/N exceedances were found in samples collected from the southwest corner of AEC 8, which is the area closest to Industrial Avenue. AEs were not detected at AEC 8.

In AEC 13, TB/Ns were reported in 23 samples at concentrations ranging from 0.06 ppm in Sample P31/1.5-2' to 121.5 ppm in Sample 123/0-0.5'. NTB/Ns were detected in 21 samples at levels ranging from 0.18 ppm in Sample S/T31/1.5-2' to 735.6 ppm in Sample 121/0-0.5'.

In AEC 13, all TB/N compounds were detected below their respective SCCs. AEs were not found.

Polychlorinated Biphenyls. In AECs 8 and 13, PCB exceedances were detected in 2 samples, one from each AEC. PCB Aroclor 1254 was found at a slightly elevated concentration of 2.7 ppm at sample location 148/1.5-2', in the center of the southern border of AEC 8 (Figure 6.5-3 and Table 6.5-4). PCB Aroclor 1248 was detected at 6 ppm at sample location S/T29/0-0.5', in the northwest corner of AEC 13 (Figure 6.5-7 and Table 6.5-9).

Metals and Petroleum Hydrocarbons. In AEC 13, lead and arsenic were detected above their respective SCCs of 600 and 2 ppm (Figure 6.5-4 and Table 6.5-10). Lead was found at a concentration of 850 ppm in Sample S/T29/0-0.5'. Arsenic exceedances were detected at the west-southwest portions of this area at concentrations ranging from 2.2 ppm in Sample S/T29(A)/0-0.5' to 97.6 ppm in Sample S/T31/0-0.5'.

PHCs in AECs 8 and 13 were detected below the SCC in all 21 samples at concentrations ranging from 36 ppm in Sample 148/0-0.5' to 750 ppm in Sample 015/0-0.5'.

6.5.1.2 Subsurface

Volatile Organic Compounds. TVOCs were found in only one sample from both AECs. Analysis of Sample 015/2-2.5' (AEC 13) revealed a TVOC concentration of 0.05 ppm. NTVOCs were detected in 6 samples at concentrations ranging from 0.01 ppm in Sample 118/5.5-6' to 0.04 ppm in Sample 015/2-2.5'. All TVOCs were detected below their respective SCCs.

Semi-Volatiles. TB/Ns were found in all 17 samples analyzed in AECs 8 and 13 at levels ranging from 0.09 ppm in Sample MW4d/8-8.5' to 1,107 ppm in Sample 117/2.5-3'. NTB/Ns were detected in 15 samples at concentrations ranging from 0.93 ppm in Sample R31.75/8' (AEC 8) to 877 ppm in Sample 015/2.5-3' (AEC 13).

DEHP and naphthalene exceedances were the only TB/Ns found. DEHP was detected in AEC 8 at 1,100 ppm in Sample 117/2.5-3', and naphthalene in AEC 13 at 370 ppm in Sample 015/2.5-3'. AEs were not found in either AEC 8 or 13.

Polychlorinated Biphenyls. PCBs were only detected at a concentration of 0.01 ppm, below the SCC, in AEC 13 Samples R28.5/8' and P30/4'.

Metals and Petroleum Hydrocarbons. Metals were found below their respective Non-Residential Surface SCCs in the one sample (121/5-5.5') analyzed in AEC 13. PHCs were detected in all 8 samples collected from both AECs at concentrations ranging from 7.1 ppm in Samples 118/5-5.6' and 119/7-7.5' (AEC 13) to 3,600 ppm in Sample 015/2-2.5' (AEC 13). All PHCs were found below the SCC.

6.5.1.3 Summary

In AEC 8 a few "hot spots" of TB/Ns and one of PCB Aroclor 1254 were found at the surface. One DEHP "hot spot" was found at a depth of 3 feet bg.

In AEC 13, one PCB Aroclor 1248 and a few lead and arsenic "hot spots" were detected at the surface, and one elevated naphthalene concentration was found at a depth of 3 feet bg. These areas are considered to be of low environmental concern.

6.6 Region VI

6.6.1 AEC 9A - Ester I Tank Farm

AEC 9A is composed of the Ester I tank farm. The tanks in AEC 9A contain chemicals used in and produced by the processing activities in the Ester I building. From approximately 1961 through 1966, heat-transfer fluids containing PCBs were also stored in this area and used for manufacturing. The capryl still where PCBs were used by Grace in the 1960s can be found in this area. In 1991, the exposed soil areas in the Ester I process tank farm were paved, and the entire area was diked.

During 1988 and 1992, 40 soil samples, including 4 duplicates, were collected from AEC 9A. 11 samples were analyzed for VOCs, 22 for B/Ns, 7 for AEs, 34 for PCBs, 1 for metals, and 5 for PHCs. Soil analytical results are shown on Figures 6.6-1 through 6.6-7 and are listed on Tables 6.6-1 through 6.6-6.

In addition, on January 2 and February 25, 1991 (as part of Hatco's Project 50) 14 surface soil samples were collected and analyzed for PCBs. The PCBs distribution is presented in Figure 1 of Appendix B and in the draft RI work plan - Appendix M (DRAI, August 1992).

6.6.1.1 Surface

Volatile Organic Compounds. TVOCs were only detected in 2 samples at concentrations of 0.02 ppm in Sample 104/1-1.5' and 22.08 ppm in Sample F6/1-1.5'. NTVOCs were found in all 3 samples at 0.14 ppm in Sample 105/1.5-2', 0.25 ppm in Sample 104/1-1.5' and 5.25 ppm in Sample F6/1-1.5'. Xylene, the only TVOC exceedance (above 10 ppm), was detected at a concentration of 19 ppm in Sample F6/1-1.5' (Figure 6.6-1 and Table 6.6-1).

Semi-Volatiles. TB/Ns were detected in all 13 samples analyzed at concentrations ranging from 12.41 ppm in Sample H7/0-0.5' to 1,520 ppm in Sample G6/0-0.5'. NTB/Ns were found in 12 samples at levels ranging from 26.97 ppm (duplicate 30.7 ppm) in Sample F7/0-0.5' to 986 ppm in Sample B6/0-0.5'.

DEHP, BBP, DEP, DBP and DOP were detected above their respective SCCs (Figure and Table 6.6-2). These exceedances were all found within the tank farm and at the southern and western outside perimeters of the bermed area.

DEHP exceedances were detected in 6 samples at concentrations ranging from 120 ppm in Sample 104/1-1.5' to 1,400 ppm in Sample B6/0-0.5'. BBP exceedances were found in 2 samples, Sample 105/0-0.5' (110 ppm) and Sample G6/0-0.5' (130 ppm). DEP was only detected in Sample G6/0-0.5' at 290 ppm. DEP and DOP exceedances were only found in Sample G6/0-0.5' at 360 ppm and Sample G6/0-0.5' at 130 ppm, respectively.

AEs were detected below their respective SCCs in all 4 samples at concentrations ranging from 0.31 ppm in Sample H7/0-0.5' to 9.7 ppm in Sample G7/1.5-2'.

Polychlorinated Biphenyls. PCBs, specifically Aroclors 1248 and 1254, were detected in 12 samples. In 7 samples, the SCC of 2 ppm was exceeded. Surface PCB exceedances ranged from 2.34 ppm in Sample B6/0-0.5' to 94,000 ppm (Aroclor 1248) in Sample S6/0-0.5 (Figure 1, Appendix B).

Metals and Petroleum Hydrocarbons. All detected metals were below the Non-Residential Surface SCCs in the one sample analyzed (Sample 104/1-1.5'). PHCs were found below the SCC in the two samples analyzed (Samples 104/1-1.5' and 105/0-0.5').

6.6.1.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in 7 samples at concentrations ranging from 0.23 ppm in Sample H5/8' to 220.9 ppm (duplicate 202.1 ppm) in Sample 105/5-5.6'. NTVOCs were found in all 8 samples analyzed at levels ranging from 1.55 ppm in Sample 104/4-6' to 532 ppm (duplicate 430.2 ppm) in Sample 105/5-5.6'.

Benzene, xylene and TCE were the only TVOC exceedances detected (Figure 6.6-5). Benzene was found at 2.1 ppm in Sample G6/8' and 9.9 ppm (duplicate 8.2 ppm) in Sample 105/5.5-6'. Xylene was detected at 57 ppm in Sample F6/4'. However, at 8 feet bg in this sample, xylene was found at 0.22 ppm, below the SCC of 10 ppm. Although one TCE exceedance was detected at 7.9 ppm in Sample 105/5.5-6', in the duplicate analysis TCE was not detected.

Semi-Volatiles. TB/Ns were detected in all 9 samples analyzed at concentrations ranging from 2.3 ppm in Sample F6/8' to 2,428 ppm (duplicate 2,277 ppm) in Sample 105/5.5-6'. NTB/Ns were also found in 9 samples at levels ranging from 2 ppm in Sample H/G7/2-2.5' to 4,588 ppm (duplicate 4,197 ppm) in Sample 105/5.5-6'.

DEHP, BBP, DEP and DBP were detected at concentrations exceeding their respective SCCs (Figure 6.6-6). DEHP exceedances were detected in 5 samples at concentrations ranging from 210 ppm in Sample H5/4' to 1,100 ppm (duplicate 1,300 ppm) in Sample 105/5.5-6'. BBP was found in Sample 105/5.5-6' at 170 ppm (duplicate 140 ppm). DEP exceedances were only detected in Samples 105/5.5-6' (58 ppm) and G6/6' (180 ppm [duplicate 130 ppm]). In the duplicate analysis of Sample 105/5.5-6', a DEP concentration of 40 ppm, below the SCC, was found. DBP exceedances were detected in 5 samples at levels ranging from 270 ppm in Sample G6/6' to 1,100 ppm (duplicate 760 ppm) in Sample 105/5.5-6'.

All TB/N subsurface exceedances were found within the tank farm and at the outside perimeter and downgradient of the tank farm.

AEs were not detected in the 3 subsurface samples analyzed, Samples F6/8', G6(A)/4' and G6(B)/4'.

Polychlorinated Biphenyls. PCBs were found in 15 samples. At only 3 sample locations, all within the tank farm, was the SCC of 2 ppm exceeded. PCB exceedances were detected at 2.5 ppm in Sample G6/4', 5.3 ppm in Sample H/G/7.5-8' and 13 ppm in Sample H/G/7/4.4-5' (Figure 6.6-7).

Petroleum Hydrocarbons. PHCs exceeded the SCC in the only sample analyzed. Duplicate analysis of Sample 105/5.5-6' revealed PHC concentrations of 13,000 and 15,000 ppm (Figure 6.6-4 and Table 6.6-6).

6.6.1.3 Summary

At the surface, one "hot spot" of xylenes and elevated concentrations of phthalates and PCB Aroclors 1248 and 1254 have impacted this area within and at the outside perimeter of the tank farm. PCBs exceedances were reported at most locations within the tank farm and at the outside perimeter of the bermed area (Figure 6.6-3 and Table 6.6-4). These ranged from less than 10 to over 1,000 ppm.

In subsurface soils, AEC 9A was impacted by benzene; xylene; all phthalates, except for DOP and PHCs, to a depth of 6 feet bg; and PCB Aroclors 1248 and 1254 to a depth of 8 feet bg. These soils were impacted generally within the tank farm and south and west of the bermed area.

6.6.2 AEC 9B - Alcohol Tank Farm

AEC 9B consists of the alcohol tank farm. The tanks in this area are set on and contained by concrete.

Twenty-two samples, including one duplicate were collected from this area. Eight samples were analyzed for VOCs, 11 for B/Ns, 4 for AEs, 17 for PCBs, 2 for PHCs, and 2 each for sodium and chloride. Soil analytical results are

shown on Figures 6.6-1 through 6.6-7 and are listed on Tables 6.6-7 through 6.6-12.

6.6.2.1 Surface

Volatile Organic Compounds. TVOCs and NTVOCs were detected in the one sample analyzed (Sample 102/1-1.5') at 0.002 and 0.26 ppm, respectively. All TVOCs detected were below their respective SCCs.

Semi-Volatiles. TB/Ns were detected in all eight samples analyzed at concentrations ranging from 0.02 ppm in Sample B4.25/1.5-2' to 46.71 ppm in Sample 102/0-0.5'. NTB/Ns were also found in all 8 samples at levels ranging from 0.74 ppm in Sample A4.25/1.5-2' to 197.6 ppm in Sample G.4.25/0-0.5'. TB/N compounds detected were below their respective SCCs.

AEs were only detected in one sample (Sample H4.5/0-0.5') at a concentration, below the SCC, of 0.12 ppm.

Polychlorinated Biphenyls. PCB Aroclors 1248 and 1254, were detected above the SCC in only 1 soil sample. Analysis of Sample H4.5/0-0.5' revealed a PCB concentration of 6.29 ppm. This sample was collected from a location southwest and downgradient of the tank farm in close proximity to a transformer (AEC 12) (Figure 6.6-3 and Table 6.6-10).

Petroleum Hydrocarbons. PHCs were detected below the SCC at a concentration of 6.7 ppm in the only sample analyzed (Sample 102/0-0.5').

6.6.2.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in 3 samples at concentrations of 0.01 ppm in Sample H4.5/8', 0.03 ppm in Sample H4.5/12' and 0.07 ppm in Sample A4/4'. NTVOCs were only found in Sample 102/5-5.6' at 0.12 ppm. All TVOCs detected were below their respective SCCs.

Semi-Volatiles. TB/Ns were only detected in one sample (Sample H4.5/8') at a concentration of 0.74 ppm. NTB/Ns were found in all 3 samples at concentrations of 0.31 ppm in Sample A4/8', 1.88 ppm in Sample H4.5/8' and 19.73 ppm in Sample 102/5.5-6'. TB/N compounds were found below their respective SCCs, and AEs were not found in the 2 subsurface samples analyzed (Samples A4/8' and H4.5/8').

Polychlorinated Biphenyls. PCB Aroclor 1254 was detected at a concentration exceeding the SCC, at the same sample location as the surface PCB exceedance. Analysis of Sample H4.5/8' revealed a slightly elevated PCB concentration of 2.2 ppm (Figure 6.6-7). However, Aroclor 1254 was not detected at the 4-foot interval but was detected at the 12-foot interval at a concentration of 0.10 ppm, below the SCC.

Petroleum Hydrocarbons and Miscellaneous Parameters. PHCs were detected below the SCC at a concentration of 7.5 ppm in the only sample analyzed (Sample 102/5.5-6'). Analysis of Duplicate Sample A4.5/6' revealed sodium concentrations of 101 and 107 ppm and chloride concentrations of 91 and 80 ppm. There are no NJDEPE SCCs established for these compounds at this time.

6.6.2.3 Summary

In AEC 9B, one PCB "hot spot", consisting of Aroclors 1248 and 1254, was found at the surface and one slight exceedance was found at a depth of 8 feet bg. This elevated PCB concentration may be due to the close proximity of this location to AEC 12. VOCs, B/Ns and PHCs have not impacted AEC 9B. Therefore, this area is considered to be of low environmental concern.

6.6.3 AEC 9D - Scales Tank Area

AEC 9D is the scales tank area, located on the west side of Hatco. These tanks store plasticizers and lubricants. Ten soil samples were collected from AEC 9D; 6 samples were analyzed for VOCs, 10 for B/Ns and PCBs, and 2 for AEs and PHCs. Soil analytical results are shown on Figures 6.6-1 through 6.6-7 and listed on Tables 6.6-13 through 6.6-17.

6.6.3.1 Surface and Subsurface

Volatile Organic Compounds. TVOCs and NTVOCs were only detected in 3 subsurface samples. TVOCs were found at 0.04 ppm in Sample K4.5/4', 0.44 ppm in Sample I4.5/4' and 0.56 ppm in Sample K4.25/4'. NTVOCs were detected at 0.07 ppm in Sample 149/2-2.5', 0.08 ppm in Sample I4.5/4' and 0.11 ppm in Sample 149/5-5.5'. Surface samples were not analyzed for VOCs. TVOCs detected were all below their respective SCCs.

Semi-Volatiles. TB/Ns and NTB/Ns in AEC 9D were detected in all 10 samples analyzed. TB/Ns ranged from 0.14 ppm in Sample I4.5/4' to 23.6 ppm in Sample K4.5/1.5-2'. NTB/Ns ranged from 1.3 ppm in Sample 149/2-2.5' to 85.65 ppm in Sample I4/1.5-2'.

TB/N exceedances and AEs were not detected.

Polychlorinated Biphenyls. PCBs, mostly Aroclor 1248, were found in 5 soil samples; in 3 of these samples, PCBs exceeded the SCC (Figure 6.6-3 and Table 6.6-16). Analysis of Surface Sample I4.5/1.5-2' and Subsurface Sample I4/4' revealed PCB exceedances of 21.9 and 4.6 ppm, respectively. Both of these samples were collected from locations adjacent to the tanks.

PCBs were detected at 3.8 ppm, slightly above the SCC, in Surface Sample K4.5/1.5-2'. This sample was collected southwest of the tanks in close proximity to AEC 2.

Petroleum Hydrocarbons. PHCs were detected below the SCC in both samples analyzed. Analysis of Samples 149/2-2.5' and 149/5-5.5' revealed PHC concentrations of 280 and 37 ppm, respectively.

6.6.3.2 Summary

In AEC 9D, three "hot spots" of PCBs were detected, 2 in the surface and one in the subsurface soils to a depth of 4 feet bg.

VOCs, B/Ns, AEs and PHCs have not impacted AEC 9D. This area is considered to be of low environmental concern.

6.6.4 AEC 10C - Former Drum and Waste Storage Area West of Warehouse No. 4

AEC 10C consists of a former drum and waste storage area located west of Warehouse No. 4. Thirty-two samples, including 2 duplicates, were collected. Five samples were analyzed for VOCs, 13 for B/Ns, 2 for AEs, 29 for PCBs, 2 for metals, and 2 for PHCs. Soil analytical results are shown on Figures 6.6-1 through 6.6-7 and listed on Tables 6.6-18 through 6.6-23.

6.6.4.1 Surface

Volatile Organic Compounds. TVOCs were detected in one sample, at a concentration of 0.03 ppm (Sample I7/1.5-2'). NTVOCs were found in both samples analyzed at 0.05 ppm (Sample I06/1.5-2') and 0.01 ppm (Sample I09/1-1.5'). All TVOCs detected were below their respective SCCs.

Semi-Volatiles. TB/Ns were found in all 8 samples at concentrations ranging from 0.53 ppm in Sample K5/1.5-2' to 104.02 ppm in Sample C5/1.5-2'. NTB/Ns were detected in 6 samples at levels ranging from 1.87 ppm in Sample I7/1.5-2' to 23.21 ppm in Sample I7/0-0.5'.

AEs were not found in the one sample analyzed. All TB/Ns were detected at concentrations below their SCCs.

Polychlorinated Biphenyls. PCBs, predominantly Aroclor 1248, were found in 7 samples; in 6 of these samples the SCC of 2 ppm was exceeded. PCB exceedances, primarily detected at the center, along the western border or within 100 feet west of AEC 10C, ranged from 5.3 ppm in Sample K5/0-0.5' to 73 ppm (duplicate 6.8 ppm) in Sample I6/0-0.5' (Figure 6.6-3 and Table 6.6-21).

Metals and Petroleum Hydrocarbons. Arsenic was detected at a concentration slightly exceeding the SCC of 2 ppm. Analysis of Sample I7/1.5-2' revealed an arsenic level of 2.8 ppm (Figure 6.6-4 and Table 6.6-22). PHCs were reported, below the SCC, at 95 ppm in Sample I09/0-0.5'.

6.6.4.2 Subsurface

Volatile Organic Compounds. TVOCs and NTVOCs were detected in 2 samples. TVOCs and NTVOCs were found in Sample I09/4-4.5' at 0.01 and 0.02 ppm, respectively. TVOCs and NTVOCs, in Sample I7/4', were detected at 0.01 and 0.05 ppm, respectively. All TVOCs were found below their respective SCCs.

Semi-Volatiles. TB/Ns and NTB/Ns were detected in all 5 samples analyzed. TB/N concentrations ranged from 1.17 ppm in Sample I7/4' to 243.9 ppm in Sample I09/4-4.5'. NTB/N levels ranged from 1.37 ppm in Sample I7/4' to 4,240 ppm in Sample I09/4-4.5'.

DEHP was the only B/N compound detected above the SCC of 100 ppm (Figure 6.6-6 and Table 6.6-19). DEHP exceedances were found along the western border of AEC 10C at 100 ppm in Sample K6/2-2.5' and at 200 ppm in Sample I09/4-4.5'. AEs were not detected in the one sample analyzed (I7/4').

Polychlorinated Biphenyls. PCB Aroclors 1248 and 1254 were found in 8 samples; in 3 of these samples the SCC of 2 ppm was exceeded. PCB exceedances were detected at 48 ppm at sample location K5/4-4.5', 78 ppm at sample

location K6/2-2.5' and 120 ppm at sample location K6/9.5-10', all along the western border of AEC 10C (Figure 6.6-7).

Metals and Petroleum Hydrocarbons. All metals detected were below their Non-Residential Surface SCCs in the one sample analyzed (Sample C5/6'). PHCs were found at 510 ppm in Sample 109/4-4.5'; this level is below the Total Organic Compound SCC of 10,000 ppm.

6.6.4.3 Summary

PCBs and, to a lesser extent, DEHP have impacted AEC 10C along the western border, in close proximity to AEC 2. PCB Aroclor 1248 impacted the surface, and a few "hot spots" of Aroclors 1248 and 1254 impacted subsurface soils to a depth of 10 feet bg. However, DEHP only slightly impacted surface soils.

VOCs, metals and PHCs have not impacted AEC 10C.

6.6.5 AECs 18A and 18B - Pilot Plants I and II

AEC 18A is the Pilot Plant I building and the area surrounding it; AEC 18B consists of the Pilot Plant II building and surrounding area. These buildings have been used for small-scale manufacturing to test new processes or equipment. They are AECs because chemicals are employed and produced when the tests are conducted.

Twelve samples were collected from AEC 18A. Six samples were analyzed for VOCs, 10 for B/Ns, 3 for AEs, 12 for PCBs, and 3 for metals.

Fifteen soil samples were collected from AEC 18B. Five samples were analyzed for VOCs, 13 for B/Ns, 3 for AEs, 15 for PCBs, and 2 for metals. Soil analytical results are shown on Figures 6.6-1 through 6.6-7 and listed on Tables 6.6-24 through 6.6-33.

6.6.5.1 Surface

Volatile Organic Compounds. In AEC 18A, TVOCs were detected, below the SCC, at 0.07 ppm in Sample B3.5/1.5-2', the only sample analyzed. NTVOCs were not found. VOCs were not detected in the one sample analyzed in AEC 18B (Sample K3/1.5-2').

Semi-Volatiles. TB/Ns in AECs 18A and 18B were found in all 14 samples analyzed at concentrations ranging from 0.01 ppm in Sample G3.75/0-0.5' (AEC 18A) to 1,596 ppm in Sample H3.75/0-0.5' (AEC 18B). NTB/Ns were detected in 14 samples at levels ranging from 0.18 ppm in Sample I3.75/0-0.5' (AEC 18B) to 1,480 ppm in Sample K3.75/0-0.5' (AEC 18B).

TB/N exceedances were only detected in AEC 18B (Figure 6.6-2 and Table 6.6-30). DEHP exceedances were found at concentrations of 180 ppm at sample location I3/1.5-2', within 15 feet north of Pilot Plant II, and 1,500 ppm at sample location K3.75/0-0.5', southwest and downgradient of Pilot Plant II.

AEs were not detected in the 4 samples analyzed.

Polychlorinated Biphenyls. PCBs were found in 12 soil samples; in only one sample, the SCC of 2 ppm was exceeded. Analysis of Sample I3/1.5-2' (AEC 18B) revealed PCB Aroclors 1248 and 1254 concentrations of 11.3 ppm (Figure 6.6-3 and Tables 6.6-32).

Metals. In AEC 18A, arsenic was detected slightly above the SCC at 3 ppm in Sample 113.25/1.5-2'. Also in AEC 18B, arsenic exceedances were found at 3.2 ppm in Sample F3.5/0-0.5' and 3.9 ppm in Sample H3.75/0-0.5' (Figure 6.6-4 and Tables 6.6-28 and 6.6-33).

6.6.5.2 Subsurface

Volatile Organic Compounds. TVOCs were detected in 6 samples at concentrations ranging from 0.001 ppm in Sample G3.75/4' (AEC 18A) to 0.09 ppm in Sample G3.75/2'. NTVOCs were not found. All detected TVOCs were below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 8 samples at concentrations ranging from 0.18 ppm in Sample G3.75/4' (AEC 18A) to 39.94 ppm in Sample K3.75/4' (AEC 18B). NTB/Ns were detected in all 9 samples at levels ranging from 0.49 ppm in Sample G3.75/8' (AEC 18A) to 21.85 ppm in Sample K3.75/8' (AEC 18B).

All detected TB/N compounds were below their respective SCCs. AEs were not found in the two samples analyzed for these parameters.

Polychlorinated Biphenyls

PCBs were found in 6 soil samples at concentrations ranging from 0.01 ppm in Sample G3.75/8' (AEC 18A) to 0.55 ppm in Sample B3.75/6' (AEC 18A). All detected PCBs were below the SCC.

Metals. All metals found in Sample G3.75/4' were detected below their respective SCCs.

6.6.5.3 Summary

One "hot spot" of PCB Aroclors 1248 and 1254 and two "hot spots" of DEHP have impacted AEC 18B at the surface. Slightly elevated arsenic concentrations were detected in surface samples from both AECs. Subsurface soils at AEC 18B have not been impacted. AEC 18A has not been impacted at the surface or the subsurface. Both areas are considered to be of low environmental concern.

6.7 Region VII

6.7.1 AEC 16 - Research and Development Laboratory

AEC 16 consists of the research and development laboratory. Historically, this area has housed no chemical storage or manufacturing operations. It has been designated an AEC in order to determine whether or not contamination is present based upon its use for research purposes. Within this area, 17 soil samples were collected; one sample was analyzed for VOCs, 13 for B/Ns, 3 for AEs, 13 for PCBs and 3 for metals.

Four soil samples were collected from sample location A1/2-2.5', approximately 125 feet southwest (downgradient) of AEC 16. All 4 samples analyzed for PCBs, and one for B/Ns.

Soil analytical results are shown on Figures 6.7-1 through 6.7-6 and listed on Tables 6.7-1 through 6.7-5.

6.7.1.1 Surface and Subsurface

Volatile Organic Compounds. TVOCs in Sample DD34/6' were detected, below the SCC, at 0.004 ppm; NTVOCs were not found. Analysis of VOCs was not requested for surface samples.

Semi-Volatiles. TB/Ns were detected in all 7 surface samples at concentrations ranging from 0.09 ppm in Sample E34/0.5-1' to 6.3 ppm in Sample FF34/1.5-2'. NTB/Ns were also found in all 7 samples at levels ranging from 0.09 ppm in Sample E34/0.5-1' to 9.93 ppm in Sample FF35/0-0.5'.

TB/Ns were detected in 5 subsurface samples at concentrations ranging from 0.08 ppm in Sample DD34/10' to 0.31 ppm in Sample DD35/6'. NTB/Ns were found in 5 samples at levels ranging from 0.15 ppm in Sample DD34/10' to 0.75 ppm in Sample DD34/6'. TB/N and NTB/N concentrations detected in Sample A1/2-2.5' were 24.2 and 0.41 ppm, respectively.

All TB/Ns in surface and subsurface samples were found below their respective SCCs. AEs were not detected in AEC 16.

Polychlorinated Biphenyls. PCBs were only detected at the surface in 3 samples. PCB concentrations were 0.07 ppm in Sample DD33/0-0.5', 0.23 ppm in Sample FF34/1.5-2' and 1.01 ppm in Sample FF35/0-0.5'; all below the SCC. In Sample A1/0-0.5', PCBs were detected, below the SCC, at a concentration of 0.4 ppm.

Metals. Arsenic was found at concentrations slightly exceeding the SCC at 2.9 ppm in Sample FF35/0-0.5' and 3.1 ppm in Sample E35/0-0.5' (Figure 6.7-4 and Table 6.7-5).

6.7.1.2 Summary

AEC 16 has not been impacted by VOCs, B/Ns or PCBs and contains only slight exceedances of arsenic. This area is considered to be of low environmental concern.

6.7.2 AEC 17 - Clean Fill Area

AEC 17, the clean fill area, is considered an AEC to confirm the previous PP+40 analytical results from September 1989. Twelve soil samples, including one duplicate, were collected from this area. Five samples were analyzed for VOCs, 12 for B/Ns, 9 for AEs, 12 for PCBs, and 7 for metals. Soil analytical results are shown on Figures 6.7-1 through 6.7-6 and listed on Tables 6.7-6 through 6.7-10.

6.7.2.1 Surface and Subsurface

Volatile Organic Compounds. Analysis for VOCs was only performed on subsurface samples. TVOCs and NTVOCs were detected in 4 samples. TVOCs ranged from 0.004 ppm in Sample FD1/6' to 0.03 ppm in Sample FD6/6.5'. NTVOCs ranged from 0.01 ppm in Samples FD2/6' and FD5/7' to 0.5 ppm in Sample FD1/6'.

All TVOCs detected were below their respective SCCs.

Semi-Volatiles. In surface soils, TB/Ns were only detected in one sample at a concentration of 1.22 ppm (Sample CC2/0-0.5'). NTB/Ns were found in all 3 samples analyzed at 0.14 ppm in Sample AA1/1.5-2', 7.1 ppm in Sample CC2/0-0.5' and 16.31 ppm in Sample Y2/0-0.5'. In subsurface soils, TB/Ns were detected in 8 samples at concentrations ranging from 0.2 ppm in Sample MW12s/11-11.5' to 7.14 ppm in Sample FD2/6'. NTB/Ns were found in 8 samples at levels ranging from 1.31 ppm in Sample FD2/6' to 20.88 ppm in Sample FD5/7'.

In surface and subsurface soils, TB/N compounds were all detected below their corresponding SCCs. AEs were not found.

Polychlorinated Biphenyls. PCBs in surface and subsurface soils were detected in 1 sample. Analysis of Sample Y2/0-0.5' revealed a PCB concentration of 0.03 ppm, below the SCC of 2 ppm.

Metals. Arsenic exceedances were detected at 3.4 ppm in Sample CC2/0-0.5' and 5.84 ppm in Sample FD2/6' (Figures 6.7-4 and Table 6.7-10).

6.7.2.2 Summary

In surface and subsurface soils, the arsenic exceedances found are not very significant because they were detected at concentrations only slightly exceeding the SCC. VOCs, B/Ns and PCBs have not impacted AEC 17. This area is considered to be of low environmental concern.

6.8 Region VIII

6.8.1 AECs 20 and 21B - Areas East of Sling Tail Creek and Sling Tail Creek

AEC 20 is the area east of Sling Tail Creek. This section is considered an AEC because no previous soil investigations have been conducted in it. Historically, this area has not been used for storage or manufacturing.

AEC 21B is Sling Tail Creek. Although historically this creek was not identified as an AEC, DRAI conducted sediment sampling in March 1988. Sling Tail Creek has been designated an AEC because of the past site drainage history and results of previous sediment investigations.

Sixteen soil samples, including 2 duplicates, were collected from AEC 20, and 25 sediment samples from AEC 21B. Within AEC 20, one sample was analyzed for VOCs, 13 for B/Ns, 5 for AEs, 13 for PCBs, 2 for metals, and 3 for PHCs. At AEC 21B, 25 samples, including 2 duplicates, were collected. 3 samples were analyzed for VOCs, 5 for B/Ns, 3 for AEs, and 25 for PCBs. Soil and sediment analytical results are shown on Figures 6.8-1 through 6.8-7. These data are listed on Tables 6.8-1 through 6.8-6 for AEC 20 and on Tables 6.8-7 through 6.8-10 for AEC 21B.

6.8.1.1 Surface

Volatile Organic Compounds. In AEC 20, TVOCs were not detected in the one sample analyzed. NTVOCs were found at a concentration of 0.01 ppm in Sample

W29/1.5-2'. In AEC 21B, TVOCs and NTVOCs were found in the one sample analyzed at concentrations of 0.04 and 0.01 ppm, respectively. All detected TVOCs in AECs 20 and 21B were below their respective SCCs.

Semi-Volatiles. In AEC 20, TB/Ns were detected in all 11 samples analyzed at concentrations ranging from 0.04 ppm in Sample W36/1.5-2' to 24 ppm in Sample N23/0-0.5'. NTB/Ns were also detected in all 11 samples at levels ranging from 1.08 ppm in Sample X30/1.5-2' to 178.4 ppm in Sample N23/0-0.5'.

TB/Ns, in AEC 21B, were found in all 3 samples analyzed at concentrations of 0.28 ppm (Sample ST6/0-0.5'), 0.37 ppm (Sample ST5/0-0.5') and 2.07 ppm (Sample ST7/0-0.5'). NTVOCs were detected in 2 samples at concentrations of 0.35 ppm (Sample ST5/0-0.5') and 7.61 ppm (ST6/1.5-2').

In AECs 20 and 21B, all TB/Ns found were at levels below their respective SCCs. AEs were not detected in AECs 20 and 21B.

Polychlorinated Biphenyls. In AEC 20, PCBs were only detected in one sample at a concentration of 0.34 ppm (Sample X29/0-0.5'). This level is below the SCC.

In AEC 21B, PCB Aroclor 1248 exceedances were detected in only 3 samples which were collected during March 1988. These exceedances were found at the southern end of Sling Tail Creek in Samples ST1/0-1' and ST1/1-1.5' at concentrations of 11 ppm (duplicate 11 ppm) and 9.8 ppm, respectively. During the September 1992 RI work, 2 samples were collected from these locations at the 0 to 0.5-foot and the 1.5 to 2-foot intervals; the respective PCB concentrations were 0.03 and 0.08 ppm, below the SCC (Figure 6.8-3 and Table 6.8-10).

Metals and Petroleum Hydrocarbons. Only samples collected from AEC 20 were analyzed for metals and PHCs. Arsenic exceedances were detected at 7.1 ppm in Sample W30/0-0.5' and at 17.6 ppm in Sample N24/0-0.5' (Figure 6.8-4 and Table 6.8-5). PHCs were found, below the SCC, in 2 samples at concentrations of 58 ppm (Sample N27/0-0.5') and 94 ppm (Sample N23/0-0.5').

6.8.1.2 Subsurface

Volatile Organic Compounds. In AEC 20, subsurface samples were not analyzed for VOCs. In AEC 21B, TVOCs were not detected in the two samples analyzed. NTVOCs were found at 0.02 ppm in Sample ST6/4' and 0.04 ppm in Sample ST11/4'.

Semi-Volatiles. Analysis for B/Ns was requested in 2 samples from each AEC. In AEC 20, TB/Ns were detected at a concentration of 0.02 ppm in Samples X29/8' and N23/2-2.5'. NTB/Ns were found at concentrations of 0.95 and 3.03 ppm, respectively. TB/Ns were not detected in AEC 21B. However, NTB/Ns were reported at concentrations of 0.31 ppm in Sample ST6/4' and 0.35 ppm in Sample ST11/4'. All TB/Ns detected were below their SCCs.

Polychlorinated Biphenyls. Analysis for PCBs was requested in 2 samples from each AEC. PCBs were only detected at a concentration of 0.03 ppm, below the SCC, in Sample X29/4' (AEC 20).

6.8.1.3 Summary

AEC 20 has been impacted by two arsenic "hot spots" at the surface, both within 10 feet east of Sling Tail Creek. AEC 21B has been impacted by several Aroclor 1248 "hot spots" at the southern end of the creek to a depth of one foot bg. VOCs, B/Ns and PHCs have not impacted these areas. In addition, PCBs have not impacted AEC 20.

6.9 Miscellaneous Samples

Sixteen surface and 11 subsurface soil samples were collected from areas that have not been included in any AEC. Six samples were obtained from areas surrounding AEC 18A, 4 from around AEC 18B and one each near AECs 6 and 10C. Four samples were analyzed for VOCs, 12 for B/Ns, 23 for PCBs, 2 for metals and 8 for PHCs. Soil analytical results are listed on Tables 6.9-1 through 6.9-5.

6.9.1 Surface and Subsurface

Volatile Organic Compounds. TVOCs were only detected in Sample 101/3-3.5' (near AEC 18A) at a concentration of 0.01 ppm. NTVOCs were only found in Samples 106/1.5-2' and 106/5-5.6' (near AEC 10C) at concentrations of 0.05 and 0.14 ppm, respectively. All detected TVOCs were below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 8 samples at concentrations ranging from 0.16 ppm in Sample 101/3-3.5' (near AEC 18A) to 1,141 ppm in Sample 150/0-0.5' (near AEC 6). NTB/Ns were detected in 10 samples at levels ranging from 1.72 ppm in Sample 101/3-3.5' to 574.2 ppm in Sample 150/0-0.5'.

DBP was the only TB/N exceedance detected. Analysis of Sample 150/0-0.5' (near AEC 6), from a location within 50 feet south of the phthalic anhydride process area, revealed a DBP concentration of 880 ppm (Figure 6.3-2 and Table 6.9-2).

Polychlorinated Biphenyls. PCBs were detected in 5 samples; in 2 of these, the SCC was exceeded. Analysis of surface Samples 150/0-0.5' (near AEC 6) and 150/1.5-2' revealed PCB exceedances of 56 and 4.3 ppm, respectively.

Metals and Petroleum Hydrocarbons. All detected metals were below their respective SCCs. PHCs were found in all 8 samples at concentrations ranging from 6.9 ppm in Sample 106/5-5.6' (near AEC 18A) to 360 ppm in Sample 106/0-0.5'. PHCs were all detected below the total organic compound SCC of 10,000 ppm.

6.9.2 Summary

Sample analysis revealed one "hot spot", south of the phthalic anhydride process area and north of the naphthalene tank farm. This area contains elevated PCBs, specifically Aroclor 1248 and DBP at the surface.

Table 5.3-1
Ground Water Elevation Data
Hatco Corporation
Fords, New Jersey

Monitoring Well No.	PVC Elevation (ft, msl)	Depth to Water (1/14/92) (In feet)	Ground Water Elevations (1/14/92) (In feet)	Depth to Water (4/28/92) (In feet)	Ground Water Elevations (4/28/92) (In feet)	Depth to Water (5/14/92) (In feet)	Ground Water Elevations (5/14/92) (In feet)	Depth to Water (7/8/92) (In feet)	Ground Water Elevations (7/8/92) (In feet)	Depth to Water (10/19/92) (In feet)	Ground Water Elevations (10/19/92) (In feet)
MW1s	17.29	2.95	14.34	3.44	13.85	3.42	13.87	3.52	13.77	3.72	13.57
MW1d	17.93	2.96	14.97	3.09	14.84	3.19	14.74	3.21	14.72	3.78	14.15
MW2s	25.64	6.23	18.41	6.35	19.29	6.40	19.24	6.68	18.96	6.92	18.72
MW2d	25.84	6.92	18.92	6.94	18.90	7.15	18.69	7.35	18.49	7.96	17.88
MW3s	48.65	12.42	36.23	12.34	36.31	12.17	36.48	12.40	36.25	13.44	35.21
MW3d	47.67	12.19	35.48	12.05	35.62	12.00	35.87	12.28	35.39	13.23	34.44
MW4s	36.16	9.65	26.51	9.67	26.49	9.62	26.54	9.91	26.25	10.81	25.35
MW4d	36.13	--	--	--	--	9.47	26.66	9.71	26.42	10.42	25.71
MW5s	21.39	5.46	15.93	5.79	15.60	5.84	15.55	5.85	15.54	6.18	15.21
MW6s	19.84	4.74	15.10	5.14	14.70	5.18	14.66	5.21	14.63	5.34	14.50
MW7s	21.10	7.55	13.55	7.78	13.32	7.60	13.50	7.71	13.39	8.03	13.07
MW7d	19.56	NI ¹	NI	NI	NI	5.99	13.57	5.95	13.61	6.29	12.78
MW8s	24.43	3.96	20.47	4.41	20.02	3.37	21.06	4.52	19.91	5.02	19.41
MW9s	29.29	3.35	25.94	3.14	26.15	3.82	25.47	4.00	25.29	4.18	25.11
MW10s	28.69	4.63	24.33	5.13	23.56	5.07	23.62	5.31	23.38	5.45	23.24
MW11s	26.89	--	--	--	--	6.98	19.91	7.29	19.60	7.70	19.19
MW12s	55.82	--	--	--	--	23.69	32.13	23.97	31.85	24.70	31.12
MW13s	40.66	NI	NI	NI	NI	14.08	26.58	14.32	26.34	14.64	26.02
MW14s	44.13	NI	NI	NI	NI	11.67	32.46	9.82	34.31	15.31	28.82
MW15s	42.23	NI	NI	NI	NI	15.21	27.02	15.34 ²	26.89	16.25 ³	26.23
MW16s	35.59	NI	NI	NI	NI	8.89	26.70	9.06	26.53	10.21	25.38
MW16d	35.98	NI	NI	NI	NI	10.12	25.86	10.33	25.65	11.05	24.93
MW17s	28.52	NI	NI	NI	NI	4.84	23.68	5.11 ⁴	23.41	5.08 ⁵	23.48
MW18s	35.62	NI	NI	NI	NI	9.73	25.89	9.97	25.65	10.69	24.93
MW19s	38.07	NI	NI	NI	NI	11.40	26.67	11.59	26.48	12.87	25.20
MW20s	38.82	NI	NI	NI	NI	NI	NI	NI	NI	8.45	30.37
MW21s	37.18	NI	NI	NI	NI	NI	NI	NI	NI	8.46	28.72
MW22s	29.22	NI	NI	NI	NI	NI	NI	NI	NI	3.65	25.57

NOTES: (1) NI = Not installed.

03-2275/GW-1.wk1

- (2) 0.01 feet free product in well MW15s (7/8/92). Level is to water.
(3) 0.19 feet free product in well MW15s (10/19/92). Level is to water.
(4) 0.05 feet free product in well MW17s (7/8/92). Level is to water.
(5) 0.03 feet free product in well MW17s (10/19/92). Level is to water.

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TB/Ns were found in the subsurface soils in all 3 samples analyzed. In Samples T/U24/4', T/U24/12' and T/U24/8', TB/N concentrations of 0.02, 0.53 and 3.97 ppm, respectively, were detected. NTB/Ns were also found in all 3 samples at concentrations of 4.62 ppm (T/U24/4'), 7.28 ppm (Sample T/U24/8') and 22.6 ppm (T/U24/12'). There were no B/N exceedances or AEs detected.

In AEC 10A, PCBs were detected in one surface sample. Analysis of Sample T/U24/1.5-2' revealed a PCB concentration of 0.9 ppm, which is below the SCC. PCBs were not detected in subsurface soils.

Metals and Petroleum Hydrocarbons

In surface soils, all metals in the one sample analyzed were found either at or below their respective SCCs. PHCs were detected in all 3 surface samples analyzed; however, only one concentration exceeded the total organic compound SCC of 10,000 ppm. Analysis of Sample 129/0-0.5' revealed a PHC exceedance of 30,000 ppm (Figures 6.3-4 and Table 6.3-16). Metals and PHC analyses were not requested for subsurface samples collected from this area.

6.3.3.2 Summary

Only one PHC "hot spot" was found. This exceedance was detected at the surface within 25 feet south of AEC 10A. VOCs, B/Ns, PCBs and metals have not impacted AEC 10A. This area is considered to be of low environmental concern.

6.4 Region IV

6.4.1 AEC 7A - PA Residue Area

AEC 7A is comprised of the phthalic anhydride residue area also referred to in past reports as the K024 area. This section is located east and south of the former phthalic anhydride manufacturing facility. The distillation bottoms from the phthalic anhydride process were disposed of in this area. Analytical results for soil samples collected from AEC 7A during March 1988 indicate the presence of naphthalene and K024, an EPA-listed hazardous waste (Figures 6.4-1 through 6.4-7 and Tables 6.4-1 through 6.4-6). Approximately 18,000 cubic yards of soil were excavated within this area between July 12 and August 11, 1988. Post-excavation sampling was conducted in September 1989 and July and September 1992.

6.4.1.1 Post-excavation Sampling Results

September 1989. On September 13 and 14, 1989, post-excavation sampling was conducted in AEC 7A to confirm removal of contaminated soil. Soil samples were collected by a hand auger at 18 locations in the natural clay at the base of the excavation. Samples B-1 through B-12 were obtained from a depth of 8 to 10 feet bg, and Samples B13 through B18 from grade to 5 feet below. In addition, 21 soil samples were collected at 50-foot intervals from the natural soil occurring in the sidewalls of the excavation to verify the horizontal integrity of the cleanup. Fifteen of the sidewall samples (S-1 through S-15) were obtained at the interface of the clay and overlying soil. The remaining six (S-16 through S-21) were collected at selected locations higher up on the sidewalls.

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All soil samples were analyzed for B/Ns. All sidewall soil samples were also analyzed for PCBs. Soil analytical results are shown on Figure 6.4-8 and listed on Tables 6.4-7 through 6.4-8.

TB/N concentrations, at the base of the area excavated from 8 to 10 feet bg, ranged from 3.59 ppm in Sample B-10 to 1,450 ppm in Sample B-6. Naphthalene was the only TB/N exceedance detected at concentrations of 120 ppm (Sample B-12); 380 ppm (Sample B-2); 310 ppm (Sample B-5) and 1,400 ppm (Sample B-6).

TB/N concentrations in the base samples from the 0 to 5-foot excavation ranged from 0.35 ppm in Sample B-14 to 135.77 ppm in Sample B-13. DBP was the only TB/N exceedance detected. Analysis of Sample B-13 revealed a DBP concentration of 120 ppm.

TB/N concentrations in sidewall samples at the 8 to 10-foot excavation ranged from 11.32 ppm in Sample S-2 to 4,215 ppm in Sample S-5. Naphthalene, DEHP and DBP were detected at concentrations exceeding their respective SCCs. Naphthalene was found at 880 ppm in Sample S-7; 970 ppm in Sample S-6 and 4,000 ppm in Sample S-5; all of these locations are in the northwest corner of the excavation. DEHP exceedances, all at the eastern side of the excavation, were detected at 120 ppm in Sample S-12, 170 ppm in Sample S-13 and 270 ppm in Sample S-11.

At the sidewalls of the 0 to 5-foot excavation, only DBP and naphthalene were found at concentrations exceeding their respective SCCs. DBP and naphthalene were detected in Sample S-18 at concentrations of 750 and 670 ppm, respectively. DBP exceedances were reported at 140 ppm in Sample S-6 and at 200 ppm in Sample S-5.

NTB/Ns at both excavations ranged from 0.93 ppm in Sample B-14 to 3,260 ppm in Sample S-18. The latter sample was collected from the southwest corner of the 0 to 5-foot excavation.

PCB exceedances were detected in 23 sidewall samples. These exceedances ranged from 3.1 ppm in Sample S-9, collected from the northeast corner of the 8 to 10-foot excavation, to 90 ppm in Sample S-18.

July and September 1992. In July 1992, during the installation of well MW13s, two soil samples were collected within 25 feet south of AEC 7A at sample intervals 1.5 to 2 feet and 12.5 to 13 feet. Both samples were analyzed for B/Ns and PCBs. In addition, during the RI field work, three samples were collected from sample location R22 at 1.5 to 2, 4 and 8 feet bg. All three samples were analyzed for B/Ns. Samples R22/1.5-2' and R22/8' were additionally analyzed for metals.

TB/Ns were detected in 4 samples at concentrations ranging from 0.04 ppm in Sample R22/4' to 7.11 ppm in Sample R22/1.5-2' (Figures 6.4-2 and 6.4-6; Table 6.4-7). NTB/Ns were found in all 5 samples at concentrations ranging from 0.13 ppm in Sample R22/8' to 3.44 ppm in Sample MW13s/1.5-2'. All TB/Ns detected were below their respective SCCs. PCBs were only found in one sample (MW13s/1.5-2') at a concentration of 0.17 ppm, below the SCC. Analysis of Sample R22/1.5-2' revealed an arsenic concentration of 2.2 ppm, only slightly exceeding the SCC of 2 ppm (Figure 6.4-4 and Table 6.4-9).

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6.4.1.2 Summary

At the 8 to 10-foot excavation, generally all sidewalls were impacted by B/Ns and PCBs. Naphthalene impacted the north and northwest sidewalls in areas adjacent to the naphthalene disposal area, and elevated DEHP concentrations impacted the east sidewall. The base of the excavation was only slightly impacted by DEHP in the southeast corner and by naphthalene near the west sidewall.

At the 0 to 5-foot excavation interval, all sidewalls were predominantly impacted by PCBs. The most elevated PCB levels were concentrated in the southwest sidewall of the excavation. Only one "hot spot" of B/Ns was detected. An elevated DBP concentration was reported in the southwest corner. The base of this excavation was only slightly impacted by DEHP at the center.

Based on the 1992 analytical results, only a slight exceedance of arsenic was detected.

6.4.2 AEC 9E - No. 6 Fuel Oil Tank Area

AEC 9E consists of the aboveground No. 6 fuel oil tank area situated behind the maintenance building. 3 soil samples were collected from this area and analyzed for B/Ns and PCBs. One sample was additionally analyzed for AEs. Soil analytical results are shown on Figures 6.4-1 through 6.4-7 and listed on Tables 6.4-10 through 6.4-12.

6.4.2.1 Surface and Subsurface

Semi-Volatiles. TB/Ns and NTB/Ns were found in all 3 samples analyzed. TB/N concentrations were 0.68 ppm in Sample FF4/8', 24.57 in Sample FF4/0-0.5' and 26.07 ppm in Sample FF4/4'. NTB/N concentrations were 36.9, 100.2 and 5.24 ppm in the respective samples.

TB/N exceedances and AEs were not detected.

Polychlorinated Biphenyls. PCBs were detected below the SCC in all 3 samples analyzed. PCBs were found at 0.04 ppm in Sample FF4/4', 0.25 ppm in Sample FF4/0-0.5' and 0.34 ppm in Sample FF4/8'.

6.4.2.2 Summary

B/Ns, AEs and PCBs have not impacted AEC 9E. Therefore, this area is considered to be of low environmental concern.

6.4.3 AEC 10B - Former Drum and Waste Storage Area North of Warehouse No. 5

AEC 10B consists of former drum and waste storage areas. Based on aerial photographs from 1966 through 1990, facilities that appear to be drum storage areas are visible at the Hatco site. There are no apparent drum storage areas in the photographs from 1939 to 1961, or in the 1987 photograph. In the 1966, 1967 and 1969 photographs, drum storage in the field on the northern portion of the site (north of Warehouse No. 5) is evident.

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Polychlorinated Biphenyls. PCBs were found in 8 samples at levels ranging from 0.02 ppm in Sample FF3/10' to 1.8 ppm in Sample 133/4-4.5'. All detected PCBs were below the SCC of 2 ppm.

Metals and Petroleum Hydrocarbons. All metals were detected below their respective SCCs. PHCs were found below the SCC in all 6 samples at concentrations ranging from 6.5 ppm in Sample 135/5-5.5' to 65 ppm in Sample 136/4.5-5'.

6.4.3.3 Summary

Generally, elevated concentrations of PCBs and one "hot spot" of DEHP have impacted AEC 10B at the surface, in the northwest corner. At the center and at the southeast corner, one "hot spot" each of PCBs was found at the surface. The arsenic exceedances detected are insignificant due to their low concentrations. Subsurface soils have not been impacted.

VOCs and PHCs have not impacted AEC 10B.

6.4.4 AEC 11A - Maintenance Building UST

AEC 11A consists of an UST area located north of the maintenance building. No documentation exists for the gasoline USTs located behind the maintenance building, because all are believed to have been excavated before the enactment of any UST regulations.

All 5 samples collected from AEC 11A were analyzed for VOCs, B/Ns and PHCs (Figures 6.4-1 through 6.4-7; Tables 6.4-19 through 6.4-21).

6.4.4.1 Surface and Subsurface

TVOCs were only detected in Sample E4/1.5-2' at a concentration of 0.01 ppm. NTVOCs were not found. TB/Ns were only detected in Samples E4/1.5-2' and E4/6' at concentrations of 0.03 and 0.75 ppm, respectively. NTVOCs were found in Samples E4(B)/4' and E4/6' at concentrations of 1.45 and 0.7 ppm, respectively. PHCs were detected in Sample E4/1.5-2' at a concentration of 88 ppm. Analysis of all other samples revealed PHC concentrations of less than 25 ppm.

6.4.4.2 Summary

In AEC 11A, all TVOC, TB/N and PHCs were detected below their respective SCCs. Therefore, AEC 11A has not been impacted by these compounds and is of low environmental concern.

6.4.5 AEC 14 - Naphthalene Area

The naphthalene area is located immediately north of the phthalic anhydride residue area. AEC 14 was formerly used for naphthalene disposal during the operation of the second phthalic anhydride unit. It is estimated that approximately 1,500 to 2,000 cubic yards of material containing naphthalene waste was placed in this area. To date, soil remediation has not taken place.

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On August 14, 1988 and September 27, 1989 six trenches were excavated in this area to determine the horizontal and vertical extent of material containing naphthalene residue. Results of these subsurface investigations are provided in Appendix F-3 of the draft RI work plan (DRAI, August 1992).

During the RI field work in September 1992, 3 samples were collected at the center of AEC 14 at sample location Z/R4.75. All 3 samples were analyzed for B/Ns and PCBs, and one for AEs (Figures 6.4-2 through 6.4-7; Tables 6.4-22 through 6.4-24).

TB/Ns were detected at 0.16 ppm at 6 feet bg, 0.09 ppm at 10 feet bg and 0.34 ppm at 14 feet bg. NTB/Ns were only found at the 6- and 14-foot intervals at concentrations of 15.08 and 0.15 ppm, respectively. AEs were not detected in the one sample analyzed (Z/R4.75/6'). All TB/Ns detected were below their respective SCCs (Table 6.4-22).

PCBs were only found at the 10-foot interval at 0.02 ppm (Table 6.4-24); this level is below the SCC.

Summary. No B/Ns, AEs or PCBs were detected in the one sample taken at the center of AEC 14. However, based on results of previous subsurface investigations during 1988 and 1989, possible evidence of naphthalene was observed in subsurface soils. Therefore, the horizontal and vertical extent of potential impact within this entire area has not been determined.

6.5 Region V

6.5.1 AECs 8 and 13 - Tarry and Southeast Fill Areas

AEC 8 is the tarry area, located on the southeast corner of the site adjacent to Industrial Avenue. A tar-like substance found in the subsurface soil is believed to be road construction waste generated from the construction of Industrial Avenue.

AEC 13 is the southeast (S.E.) fill area, which is located south of the phthalic anhydride residue area but north of the tarry area. AEC 13 has not been used for any manufacturing operation in the past, but random dumping of solid waste has occurred. The materials dumped are typically wastes from the construction of Industrial Avenue (i.e., concrete, wood).

Seventeen soil samples was collected from AEC 8. Two samples were analyzed for VOCs, 16 for B/Ns, 5 for AEs, 15 for PCBs, and 4 for PHCs. In AEC 13, 42 soil samples were collected, including 4 duplicates. Fifteen samples were analyzed for VOCs, 35 for B/Ns, 3 for AEs, 23 for PCBs, 7 for metals, and 16 for PHCs. Soil analytical results are shown on Figures 6.5-1 through 6.5-7. These data are listed on Tables 6.5-1 through 6.5-5 for AEC 8 and 6.5-6 through 6.5-11 for AEC 13.

6.5.1.1 Surface

Volatile Organic Compounds. TVOCs in both AECs 8 and 13 were detected in 3 samples. NTVOCs were found in 7 samples. TVOCs were detected at 0.004 ppm in Sample 117/1.5-2' (AEC 8), 0.02 ppm in Sample 122/1.5-2' (AEC 13) and 0.01 ppm in Sample 119/1.5-2' (AEC 13). NTVOCs concentrations ranged from 0.004 ppm in

All TVOCs detected were below their respective SCCs.

Semi-Volatiles. In surface soils, TB/Ns were only detected in one sample at a concentration of 1.22 ppm (Sample CC2/0-0.5'). NTB/Ns were found in all 3 samples analyzed at 0.14 ppm in Sample AA1/1.5-2', 7.1 ppm in Sample CC2/0-0.5' and 16.31 ppm in Sample Y2/0-0.5'. In subsurface soils, TB/Ns were detected in 8 samples at concentrations ranging from 0.2 ppm in Sample MW12s/11-11.5' to 7.14 ppm in Sample FD2/6'. NTB/Ns were found in 8 samples at levels ranging from 1.31 ppm in Sample FD2/6' to 20.88 ppm in Sample FD5/7'.

In surface and subsurface soils, TB/N compounds were all detected below their corresponding SCCs. AEs were not found.

Polychlorinated Biphenyls. PCBs in surface and subsurface soils were detected in 1 sample. Analysis of Sample Y2/0-0.5' revealed a PCB concentration of 0.03 ppm, below the SCC of 2 ppm.

Metals. Arsenic exceedances were detected at 3.4 ppm in Sample CC2/0-0.5' and 5.84 ppm in Sample FD2/6' (Figures 6.7-4 and Table 6.7-10).

6.7.2.2 Summary

In surface and subsurface soils, the arsenic exceedances found are not very significant because they were detected at concentrations only slightly exceeding the SCC. VOCs, B/Ns and PCBs have not impacted AEC 17. This area is considered to be of low environmental concern.

6.8 Region VIII

6.8.1 AECs 20 and 21B - Areas East of Sling Tail Creek and Sling Tail Creek

AEC 20 is the area east of Sling Tail Creek. This section is considered an AEC because no previous soil investigations have been conducted in it. Historically, this area has not been used for storage or manufacturing.

AEC 21B is Sling Tail Creek. Although historically this creek was not identified as an AEC, DRAI conducted sediment sampling in March 1988. Sling Tail Creek has been designated an AEC because of the past site drainage history and results of previous sediment investigations.

Sixteen soil samples, including 2 duplicates, were collected from AEC 20, and 25 sediment samples from AEC 21B. Within AEC 20, one sample was analyzed for VOCs, 13 for B/Ns, 5 for AEs, 13 for PCBs, 2 for metals, and 3 for PHCs. At AEC 21B, 25 samples, including 2 duplicates, were collected. 3 samples were analyzed for VOCs, 5 for B/Ns, 3 for AEs, and 25 for PCBs. Soil and sediment analytical results are shown on Figures 6.8-1 through 6.8-7. These data are listed on Tables 6.8-1 through 6.8-6 for AEC 20 and on Tables 6.8-7 through 6.8-10 for AEC 21B.

6.8.1.1 Surface

Volatile Organic Compounds. In AEC 20, TVOCs were not detected in the one sample analyzed. NTVOCs were found at a concentration of 0.01 ppm in Sample

W29/1.5-2'. In AEC 21B, TVOCs and NTVOCs were found in the one sample analyzed at concentrations of 0.04 and 0.01 ppm, respectively. All detected TVOCs in AECs 20 and 21B were below their respective SCCs.

Semi-Volatiles. In AEC 20, TB/Ns were detected in all 11 samples analyzed at concentrations ranging from 0.04 ppm in Sample W36/1.5-2' to 24 ppm in Sample N23/0-0.5'. NTB/Ns were also detected in all 11 samples at levels ranging from 1.08 ppm in Sample X30/1.5-2' to 178.4 ppm in Sample N23/0-0.5'.

TB/Ns, in AEC 21B, were found in all 3 samples analyzed at concentrations of 0.28 ppm (Sample ST6/0-0.5'), 0.37 ppm (Sample ST5/0-0.5') and 2.07 ppm (Sample ST7/0-0.5'). NTVOCs were detected in 2 samples at concentrations of 0.35 ppm (Sample ST5/0-0.5') and 7.61 ppm (ST6/1.5-2').

In AECs 20 and 21B, all TB/Ns found were at levels below their respective SCCs. AEs were not detected in AECs 20 and 21B.

Polychlorinated Biphenyls. In AEC 20, PCBs were only detected in one sample at a concentration of 0.34 ppm (Sample X29/0-0.5'). This level is below the SCC.

In AEC 21B, PCB Aroclor 1248 exceedances were detected in only 3 samples which were collected during March 1988. These exceedances were found at the southern end of Sling Tail Creek in Samples ST1/0-1' and ST1/1-1.5' at concentrations of 11 ppm (duplicate 11 ppm) and 9.8 ppm, respectively. During the September 1992 RI work, 2 samples were collected from these locations at the 0 to 0.5-foot and the 1.5 to 2-foot intervals; the respective PCB concentrations were 0.03 and 0.08 ppm, below the SCC (Figure 6.8-3 and Table 6.8-10).

Metals and Petroleum Hydrocarbons. Only samples collected from AEC 20 were analyzed for metals and PHCs. Arsenic exceedances were detected at 7.1 ppm in Sample W30/0-0.5' and at 17.6 ppm in Sample N24/0-0.5' (Figure 6.8-4 and Table 6.8-5). PHCs were found, below the SCC, in 2 samples at concentrations of 58 ppm (Sample N27/0-0.5') and 94 ppm (Sample N23/0-0.5').

6.8.1.2 Subsurface

Volatile Organic Compounds. In AEC 20, subsurface samples were not analyzed for VOCs. In AEC 21B, TVOCs were not detected in the two samples analyzed. NTVOCs were found at 0.02 ppm in Sample ST6/4' and 0.04 ppm in Sample ST11/4'.

Semi-Volatiles. Analysis for B/Ns was requested in 2 samples from each AEC. In AEC 20, TB/Ns were detected at a concentration of 0.02 ppm in Samples X29/8' and N23/2-2.5'. NTB/Ns were found at concentrations of 0.95 and 3.03 ppm, respectively. TB/Ns were not detected in AEC 21B. However, NTB/Ns were reported at concentrations of 0.31 ppm in Sample ST6/4' and 0.35 ppm in Sample ST11/4'. All TB/Ns detected were below their SCCs.

Polychlorinated Biphenyls. Analysis for PCBs was requested in 2 samples from each AEC. PCBs were only detected at a concentration of 0.03 ppm, below the SCC, in Sample X29/4' (AEC 20).

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6.8.1.3 Summary

AEC 20 has been impacted by two arsenic "hot spots" at the surface, both within 10 feet east of Sling Tail Creek. AEC 21B has been impacted by several Aroclor 1248 "hot spots" at the southern end of the creek to a depth of one foot bg. VOCs, B/Ns and PHCs have not impacted these areas. In addition, PCBs have not impacted AEC 20.

*Sling Tail
Creek*

6.9 Miscellaneous Samples

Sixteen surface and 11 subsurface soil samples were collected from areas that have not been included in any AEC. Six samples were obtained from areas surrounding AEC 18A, 4 from around AEC 18B and one each near AECs 6 and 10C. Four samples were analyzed for VOCs, 12 for B/Ns, 23 for PCBs, 2 for metals and 8 for PHCs. Soil analytical results are listed on Tables 6.9-1 through 6.9-5.

6.9.1 Surface and Subsurface

Volatile Organic Compounds. TVOCs were only detected in Sample 101/3-3.5' (near AEC 18A) at a concentration of 0.01 ppm. NTVOCs were only found in Samples 106/1.5-2' and 106/5-5.6' (near AEC 10C) at concentrations of 0.05 and 0.14 ppm, respectively. All detected TVOCs were below their respective SCCs.

Semi-Volatiles. TB/Ns were found in 8 samples at concentrations ranging from 0.16 ppm in Sample 101/3-3.5' (near AEC 18A) to 1,141 ppm in Sample 150/0-0.5' (near AEC 6). NTB/Ns were detected in 10 samples at levels ranging from 1.72 ppm in Sample 101/3-3.5' to 574.2 ppm in Sample 150/0-0.5'.

DBP was the only TB/N exceedance detected. Analysis of Sample 150/0-0.5' (near AEC 6), from a location within 50 feet south of the phthalic anhydride process area, revealed a DBP concentration of 880 ppm (Figure 6.3-2 and Table 6.9-2).

Polychlorinated Biphenyls. PCBs were detected in 5 samples; in 2 of these, the SCC was exceeded. Analysis of surface Samples 150/0-0.5' (near AEC 6) and 150/1.5-2' revealed PCB exceedances of 56 and 4.3 ppm, respectively.

Metals and Petroleum Hydrocarbons. All detected metals were below their respective SCCs. PHCs were found in all 8 samples at concentrations ranging from 6.9 ppm in Sample 106/5-5.6' (near AEC 18A) to 360 ppm in Sample 106/0-0.5'. PHCs were all detected below the total organic compound SCC of 10,000 ppm.

6.9.2 Summary

Sample analysis revealed one "hot spot", south of the phthalic anhydride process area and north of the naphthalene tank farm. This area contains elevated PCBs, specifically Aroclor 1248 and DBP at the surface.

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8.0 GROUND WATER SAMPLING AND TESTING RESULTS

Ground water sampling results and hydraulic testing as well as surface water sampling results are presented in this section.

8.1 Ground Water Sampling Results

Ground water at the Hatco site has been sampled quarterly and/or semi-annually since 1983 as part of NJPDES compliance. As more wells were added to the monitoring system, NJPDES reporting expanded accordingly. The largest number of wells sampled was during May and October of 1992. These sampling periods included the RI-scoping wells and the RI wells. Ground water analysis laboratory data sheets are provided in Attachment II. The NJDEPE adopted ground water quality standards are presented in Appendix G.

8.1.1 Distribution of Contaminants in Ground Water

The presentation of contaminants distribution in ground water is based on the two rounds of sampling conducted during April, May and October 1992 sampling. The 9 RI/FS scoping wells (MW9d, 13s, 14s, 15s, 16s, 16d, 17s, 18s and 19s; Appendix D) were sampled with all pre-existing wells. During October 1992, the 3 RI wells (MW20s, 21s and 22s) were also sampled.

The sampling data are presented as a series of figures (8.1-1 through 8.1-5) showing contaminant distribution and tabulation of individual compounds (Table 8.1-1 through 8.1-10).

Figure 8.1-1 (October 1992 sampling) is the base map for both the ground water and surface water sampling.

8.1.1.1 Volatile Organic Compounds. TVOC contamination at the site originates from at least five sources; therefore, there are five distinct areas where TVOC levels are high and are associated with past and present site operations. The compounds of concern in the ground water include benzene; chlorobenzene; chloroethane; 1,1-DCA; methylene chloride; toluene; 1,1,1-TCA; TCA; vinyl chloride and total xylenes. The location of all wells, site-wide distribution of VOCs, B/Ns and PCBs in ground water (and surface-water samples) for October 1992 is shown on Figure 8.1-1.

April 28 and May 14, 1992. Free product was detected in 2 of the wells, MW15s and MW17s. Sampling of both the free product and the water phase was conducted in well MW15s. The results are presented in Table 8.1-1. In the water sample collected from well MW15s, total xylenes were detected at the concentration of 190,000 parts per billion (ppb). Xylenes in the free product were reported at 57,000,000 ppb. Benzene, toluene and ethylbenzene were also found, but at significantly lower concentrations; 1,300; 750 and 500 ppb; respectively (Table 8.1-1). Distribution contours of targeted VOCs in both shallow and deep wells for April/May 1992 sampling are presented on Figure 8.1-2. The contours of total targeted VOCs indicate five discrete source areas on the site.

In the sample collected from well MW16s, toluene, benzene and TCE were detected at concentrations of 1,900; 540 and 84 ppb; respectively. Similarly,

in well MW19s, concentrations of the same compounds were found at 1,200; 820 and 18 ppb, respectively. In addition, trans-1,2-DCE was detected in well MW19s at a concentration of 17 ppb. Although wells MW16s and MW19s are in the vicinity of well MW15s, the absence of total xylenes indicates a separate source of contamination for these wells (Figure 8.1-2 and Table 8.1-1).

Near the former muck storage area and southwest of wells MW16s and MW19s, elevated concentrations of chloroethane; 1,1,1-TCA; 1,1-DCA and benzene were detected in well MW17s. The levels, as shown on Table 8.1-1, were 4,600; 2,100; 1,900 and 680 ppb, respectively. 1,1-DCE; toluene and xylenes were also found at concentrations of 180, 74 and 39 ppb, respectively. In nearby well MW10s, benzene, xylenes and toluene were found at low concentrations of 30, 11 and 1.7 ppb, respectively. In well MW9s low concentrations of 1,1-DCA and chlorobenzene were detected at 14 and 13 ppb, respectively. Very low concentrations (less than 3 ppb) of benzene, chloroethane and ethylbenzene were found in well MW8s, which is also included in this area. In well MW8s a 1,1-DCA concentration of 46 ppb and a xylenes concentration of 5.2 ppb were detected.

South of the capped Lagoons No. 1 and No. 2, only chloroethane was detected in well MW7s at a concentration of 250 ppb. Chloroethane and 1,1-DCA were found in well MW6s at concentrations of 68 and 54 ppb, respectively. Low concentrations (less than 2 ppb) of benzene and 1,1-DCE were also detected in well MW6s. TVOCs were not found in well MW1s, and only 8 ppb of chlorobenzene was detected in well MW5s.

Near the former K024 disposal area, vinyl chloride was the predominant compound detected in well MW13s, at a concentration of 9 ppb. Nearby well MW4s was ND for TVOCs. TVOC concentrations in the remaining wells ranged from ND in wells MW3s, MW14s and MW18s to chlorobenzene concentrations of 8 and 4.7 ppb in wells MW5s and MW2s, respectively.

In deep well MW1d, a concentration of chlorobenzene (24 ppb) above the NJDEPE ground water quality standards was found. TCE was also detected in well MW1d, at a concentration of 2 ppb. Low levels of chloroform, benzene, bromodichloromethane and chlorobenzene were found in nearby well MW7d; concentrations were 5.1, 1.5, 1.4 and 1.1 ppb, respectively. In well MW16d, a benzene concentration of 7.4 ppb was detected. Toluene, ethylbenzene and chlorobenzene were also detected in well MW16d, at concentrations of 5.8, 2.5 and 2.2 ppb, respectively.

October 19 through 21, 1992. In the water sample collected from well MW15s, total xylenes were found at a concentration of 12,000 ppb. In the free product layer, xylene concentration was measured at 20,000,000 ppb. Benzene, toluene, TCE, methylene chloride and vinyl chloride were also detected in well MW15s, at concentrations of 6,000; 1,200; 520; 320 and 100 ppb; respectively (Table 8.1-2). Distribution contours of total targeted VOCs in ground water are shown on Figure 8.1-3. The results indicate discrete VOC sources within the southern half of the site. The five discrete source areas are (1) vicinity, (2) the former Ponds 1 and 2, (3) the former muck storage area, (4) capped Lagoons 1 and 2 and (5) south of the former K024 disposal area.

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Toluene and benzene were the predominant compounds detected in both wells MW19s and MW16s. In well MW19s, a toluene concentration of 2,400 ppb and 1,200 ppb benzene were found. A small amount of xylenes (25 ppb) was also detected in well MW19s. In well MW16s, 1,100 ppb toluene and 770 ppb benzene were detected. Low-level methylene chloride and xylenes were also detected in wells MW16s, at MW19s. As in the April/May 1992 sampling episode, since only minor amounts of xylenes were detected in these wells, separate sources of contamination are present (Figures 8.1-2 and 8.1-3).

Chloroethane was detected at an increased level in well MW17s at 5,900 ppb (Figure 8.1-3). In addition, concentrations of xylenes and toluene increased to 59 and 170 ppb, respectively. However, concentrations of benzene; 1,1-DCA; 1,1,1-TCA and 1,1-DCE were detected at 640, 150, 50 ppb and ND, respectively. A benzene concentration of 19 ppb and a xylenes concentration of 5 ppb, lower than the levels detected in April/May 1992, were found in well MW10s. In well MW9s, an increase to 16 ppb of 1,1-DCA and an increase, to 11 ppb, of chloroethane were detected. However, chlorobenzene was ND. For well MW8s, 46 ppb 1,1-DCA; an increase from April/May 1992; was found.

South of the capped Lagoons 1 and 2, an increased concentration of chloroethane to 500 ppb was determined for well MW7s. Chloroethane and 1,1-DCA were detected in well MW6s at concentrations of 48 and 6 ppb, respectively. East of the capped Lagoon 2, benzene was found in well MW1s at 330 ppb. Near well MW1s, in well MW5s, a chlorobenzene concentration of only 8 ppb was detected.

Near the former K024 disposal area, in wells MW4s and MW13s, 1,1-DCA and vinyl chloride, respectively, were the predominant compounds. In the remaining shallow wells, which are mostly hydraulically upgradient of the various sources of contamination, TVOC concentrations are slightly above or below the NJDEPE ground water quality standards for VOCs in ground water.

In deep well MW16d, benzene and chloroethane were detected at elevated concentrations of 200 and 73 ppb, respectively. The other compounds were found at concentrations below NJDEPE ground water quality standards. Targeted VOCs were not detected in the other deep wells.

8.1.1.2 Base Neutral Compounds. There are four distinct targeted B/Ns contamination plumes at the site. These are at similar locations as the VOC plumes. The compounds of concern include DEHP, BBP, DEP, DBP, DOP and naphthalene. The site-wide distribution of targeted B/Ns in ground water are shown on Figures 8.1-4 and 8.1-5. The southwestern portion of the site is the primary B/N source.

April 28 and May 14, 1992. The April/May 1992 B/N distribution contours are presented on Figure 8.1-4. The analyses are provided on Table 8.1-3. In the sample collected from the water phase of well MW15s, DEHP, DBP, BBP, DOP and DEP were detected at concentrations of: 17,000; 9,400; 6,400; 3,200 and 2,800 ppb; respectively. Fluorene and naphthalene were also found at concentrations of 56 and 62 ppb, respectively.

In both wells MW16s and MW19s, located at the former Ponds 1 and 2, the same compounds detected in MW15s were found, but at lower concentrations. Fluorene

was not detected in either well. Only DEHP and BBP were detected at concentrations above the NJDEPE ground water quality standards, at 280 and 160 ppb, respectively, in well MW16s and at 1,700 and 650 ppb, respectively, in well MW19s. DOP was also found above ground water quality standards in well MW19s (250 ppb).

Naphthalene, at 230 ppb, was the predominant compound found in well MW17s. Additional detected compounds were acenaphthene, DEHP, BBP, DEP, DBP and pyrene; concentrations were well below the NJDEPE ground water quality standards. Only DEHP was detected in nearby well MW10s, at 190 ppb. Targeted B/Ns were not detected in well MW9s.

Near the capped Lagoons, a DEHP concentration of 2.6 ppb was detected in well MW7s. Targeted B/Ns were not found in wells MW6s and MW1s. In well MW5s 1.1 ppb acenaphthene was detected.

Near the former K024 disposal area, naphthalene was detected, in wells MW4s and MW13s, at concentrations of 22 and 3.4 ppb, respectively.

Targeted B/Ns were found only in deep well MW16d, but at concentrations below the NJDEPE ground water quality standards. Detected compounds were DEHP, BBP, DEP, DBP, DOP, isophorone and naphthalene. Concentrations of these compounds were 13, 9.1, 2.2, 25, 9.8, 2.2 and 0.57 ppb, respectively.

October 19 through 21, 1992. The October 1992 targeted B/Ns distribution contours are presented on Figure 8.1-5. In the water sample collected from well MW15s, DEHP, BBP, DEP and DBP were detected at concentrations of: 73,000; 35,000; 17,000 and 48,000 ppb; respectively. These levels represent an increase from those detected five months earlier in April, 1992. However, the same compounds were detected at much higher concentrations in the product layer of well MW15s.

DEP was the predominant compound found in well MW16s and the only contaminant detected in well MW19s at concentrations of 640 and 880 ppb, respectively. Additional compounds detected in well MW16s include DEHP, BBP and DBP, at concentrations of 130, 64 and 140 ppb, respectively.

In well MW17s, located near the former muck storage area, DEHP and BBP were the predominant compounds detected. Concentrations were 1,200 and 730 ppb, respectively. DBP, naphthalene, DOP and DEP were also found in well MW17s; the respective concentrations were 640, 480, 110 and 110 ppb. In nearby well MW10s, a DEHP concentration of 210 ppb and a naphthalene concentration of 15 ppb were found. The concentration contours (Figure 8.1-5) indicate that wells MW17s and MW10s are impacted by the same contaminant source. In nearby wells MW8s and MW9s concentrations of targeted B/Ns were ND.

Additionally, in the wells south and east of the lagoons; wells MW7s, MW6s and MW1s; were ND. Acenaphthene concentrations of 1 ppb were found in well MW5s.

In wells MW4s and MW13s near the former K024 disposal area, naphthalene concentrations of 35 and 3 ppb, respectively, were detected.

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In the deep wells, only DEP and DEHP were detected in well MW16d at concentrations of 110 and 24 ppb, respectively, an increase from the April/May 1992 levels. In wells MW2d and MW1d, very low concentrations of DEHP were detected (4 and 2 ppb, respectively). In well MW3d, DEP was found at 3 ppb.

In summary, as shown on Figures 8.1-1 through 8.1-5, the targeted VOCs and targeted B/Ns plumes have migrated further to the south since the 1983-1986 sampling, with the plumes increasing in overall size. The contaminants are concentrated primarily in the south-southwest portion of the site, with an isolated "hot spot" near the former K024 disposal area. The contaminants at the site are migrating with the shallow ground water, which flows to the south in the upper unconsolidated deposits. The solubility of the various compounds is given in Table 10.0-1.

8.1.1.3 Distribution of PCBs and Miscellaneous Parameters in Ground Water PCBs - April 28 and May 14, 1992. Based on ground water samples collected during April/May 1992, PCBs were detected in the wells located in and around the former ponds areas (Table 8.1-5). In wells MW16d, MW16s and MW19s, the PCB Aroclor 1248 was detected at concentrations of 13, 85 and 550 ppb, respectively. In well MW15s, an aqueous phase PCB (Aroclor 1248) concentration of 5,600 ppb and a free product phase PCB (Aroclor 1248) concentration of 2,800,000 ppb were found. An Aroclor 1248 concentration of 43 ppb was detected in well MW14s. In wells MW17s and MW10s, Aroclor 1248 concentrations of 18 (22) ppb and 34 (43) ppb, respectively, were detected. An Aroclor 1254 concentration of 0.9 ppb and an Aroclor 1248 concentration of 1 ppb were found in well MW1d, located near the capped lagoons. All other wells were ND for PCBs during this sampling episode.

PCBs - October 19 through 21, 1992. During the October 1992 sampling, PCB concentrations were detected in the wells located in and around the former ponds and near the Hydrotherm Building (Figure 8.1-1 and Table 8.1-6). PCB (Aroclor 1248) concentrations in wells MW16d, MW16s and MW19s were 28, 120 and 510 ppb, respectively. Concentrations of Aroclor 1248 in the aqueous and oil phases of well MW15s were 24,000 and 13,000,000 ppb; respectively. In well MW14s, both Aroclor 1254 and Aroclor 1248 concentrations of 17 and 60 ppb were detected. In wells MW10s and MW17s, Aroclor 1248 was detected at 41 and 510 ppb, respectively. All other wells were ND for PCBs.

Acid Extractable and Miscellaneous Compounds- April 28, 1992. Ground water samples collected on April 28, 1992 from wells MW1s through MW10s were ND for AEs (Table 8.1-7). In addition, these samples were analyzed for chemical oxygen demand (COD), total organic carbon (TOC) and total organic halides (TOX) (Table 8.1-8). COD levels ranged from 8.5 ppm in well MW1d to 833 ppm in well MW10s. TOC concentrations ranged from 1 ppm in well MW3s to 220 ppm in well MW10s. The concentration range of TOX was from ND in well MW1s to 420 ppb in well MW7s. Wells MW11s through MW19s were not analyzed for the above compounds when sampled in May 1992.

Acid Extractable and Miscellaneous Compounds - October 19 through 21, 1992. Concentrations of AE compounds were ND in all of the wells sampled during October 1992 (Table 8.1-9). COD levels ranged from <10 ppm in wells MW5s and MW18s to a high of 18,800 ppm in the aqueous phase in well MW15s. TOCs ranged from 3.5 ppm in well MW4d to 2,250 ppm in the aqueous phase of well MW15s.

TOX levels ranged from 41 ppb in well MW3d to 2,300 ppb in well MW21s (Figure 8.1-1 and Table 8.1-10).

8.2 Surface-Water Sampling Results

The locations of the RI surface-water samples collected during October 1992 are shown on Figure 8.1-1. These were collected from the standing water in the former K024 disposal area. Samples K1, K2 and K3 were composited for analysis; sample K4 was analyzed as a unique sample. Surface water analysis laboratory data sheets are provided in Attachment III. The two samples (K1 through K3 and K4) contained a total targeted VOC concentration of 12 ppb, consisting solely of acetone. The total NTVOC concentration was ND for both samples (see Table 8.2-1). In composite sample K1 through K3, a targeted B/N concentration of 58.2 ppb was found; and for sample K4, a concentration of 42 ppb. Concentrations of pesticides were 0.832 ppb in composite sample K1 through K3, and ND in sample K4. In both samples, the PCB (Aroclor 1248) was detected at concentrations of 4.6 and 3.1 ppb, respectively (Table 8.2-3). Concentrations of metals in samples K1 through K3 and K4 were of insignificant levels and are shown on Table 8.2-4.

The water in the excavation is strictly from surface runoff and precipitation. Based on water levels, the K024 excavation is not influenced by nor does it affect the underlying shallow aquifer. The levels detected by the sampling analysis are not significant in terms of absolute concentration and mobility and therefore, do not require further action.

8.3 Aquifer and Well Testing

Between January 5 and 8, 1993, short-duration pumping tests were conducted on four shallow and three deep monitoring wells in the vicinity of the capped lagoons, the former ponds and the former K024 disposal area. In addition, at least one observation well was monitored with each pumped well; all pumping tests were followed by recovery tests. The purpose of the pumping tests was to obtain a preliminary determination of aquifer characteristics necessary for the design of a ground water recovery system and to evaluate the potential for ground water remediation, if necessary. Hatco is awaiting approval of the March 1990 full-scale pumping test proposal submitted to the NJDEPE Division of Water Resources.

The following is an overview of the pumping test results. The wells tested, the pumping rates and drawdown at the end of test are summarized on Table 8.3-1.

On January 5, 1993, a pumping test was conducted on well MW10s. Simultaneously, water level measurements were obtained from pumping well MW10s and observation wells MW9s and MW17s. Well MW10s was pumped at 3.25 gallons per minute (gpm) for one hour, then at 5 gpm for an additional four hours. At the conclusion of the pumping test, the total drawdown at well MW10s was 6.19 feet. The total drawdowns for observation wells MW9s and MW17s were 0.22 and 0.08 feet, respectively. Upon conclusion of the pumping test, well MW10s recovered to within 90% of static conditions in approximately 20 minutes.

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On January 6, 1993, pumping tests were conducted on wells MW5s and MW7d. Wells MW1s and MW1d were used as observation wells for well MW5s. Well MW5s was pumped at a rate of 3.5 gpm for 30 minutes; then the rate was increased to 5 gpm for an additional 5.5 hours. The total drawdown for well MW5s at the conclusion of the test was 5.12 feet. The total drawdowns for observation wells MW1s and MW1d were 0.28 and 0.14 feet, respectively. Well MW5s recovered to within 90% of static conditions in approximately 25 minutes. Well MW7d was pumped at a rate of approximately 2 gpm for six hours. Wells MW6s and MW7s were used for observation wells. At the end of the pumping test, the total drawdown in well MW7d was 25.0 feet and in wells MW7s and MW6s, the drawdowns were 0.04 and 0.0 feet, respectively. Well MW7d recovered to within 90% of static conditions in approximately 20 minutes.

On January 7, 1993, pumping tests were conducted on wells MW13s and MW16s. During the pumping of well MW13s, well MW4s was used for observation. Well MW13s was pumped for six hours at a rate of 2 gpm. At the conclusion of the pumping test, a total drawdown of 1.75 feet was observed in well MW13s. A total drawdown of 0.16 feet was measured in well MW4s. Within six minutes of shutting off the pump, the water level in well MW13s recovered to static conditions. Well MW16s was initially pumped for one hour at a rate of 3 gpm, then for an additional five hours at 5 gpm. Wells MW19s and MW16d were used as observation wells. At the conclusion of the pumping test, a total drawdown of 3.90 feet was measured in well MW16s. Neither observation well exhibited measurable drawdown. Well MW16s recovered to static conditions within 10 minutes of the conclusion of the test.

On January 8, 1993, pumping tests were conducted on wells MW4d and MW16d. Wells MW4s and MW13s and wells MW16s and MW19s were the respective observation wells. Well MW4d was initially pumped at a rate of 5 gpm for three hours and then at 8 gpm for an additional three hours. At the end of the pumping test, total drawdown in well MW4d was 2.02 feet. Drawdowns for wells MW4s and MW13s were 0.12 and 0.19 feet, respectively. The water level in well MW4d recovered to within 90% of static level in approximately two minutes. Well MW16d was pumped at a rate of 5 gpm for six hours. At the conclusion of the pumping test, a total drawdown of 3.50 feet was measured. Drawdown was not measurable in either observation well. Well MW16d recovered to within 90% of static conditions in approximately 30 minutes.

The pumping test resultant drawdowns and computed transmissivities are summarized in Table 8.3-2. The pumping rates for the yielding wells ranged from 2 to 5 gpm for the shallow aquifer wells and from approximately 1 to 8 gpm for the deep wells. In general, aquifer transmissivities (for drawdown tests) ranged from approximately 1,500 to 33,000 gpd/ft.

Based upon the results of these short-term aquifer tests, most of these wells could be used for a ground water remediation or a hydraulic plume control program at the Hatco site.

$$150 - 3,300 \text{ gpd/ft}^2$$

$$\times 0.1503$$

$$22.5 - 494 \text{ ft/d}$$

$$1 = 0.01$$

$$\phi = 0.3$$

$$q = 0.225 - 4.96$$

$$v = 0.75 - 16.5 \text{ ft/d}$$

DR 833725

Dan Raviv Associates, Inc.

Job No. 86C289-ORI/D3-2462/SECT-8.WPS

Table 8.1-1
Summary of Volatile Organic Compounds in Ground Water

DRAI Sample No.:	MW1D	MW1S	MW2D	MW2S	MW3D	MW3S	MW4S	MW5S	MW6S	MW7S
Lab Sample No.:	66291	66288	66286	66285	66283	66282	66284	66290	66287	66289
Date Sampled:	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted VOCs (ppb)												
Benzene	ND	ND	ND	ND	ND	ND	ND	1.1 J	1.7 J	ND		
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Chlorobenzene	24	ND	ND	4.7 J	ND	ND	ND	8.0	ND	ND		
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	68	250		
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	54	ND		
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	1.2 J	ND		
trans-1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Trichloroethene	2.0 J	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Xylenes (Total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
TOTAL TARGETED VOCs (ppb):	28	ND	ND	4.7	ND	ND	ND	9.1	124.9	250		
Non-Targeted VOCs (ppb)												
Chlorotoluene isomer	ND	ND	ND	51	ND	ND	ND	ND	ND	ND		
Unknown	ND	7	ND	ND	ND	ND	ND	6	ND	ND		
Diisopropyl ether	20	ND	14	ND	ND	ND	ND	40	ND	ND		
2,3-Dihydro-1H-Indene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
3-Octanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
N-Butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
TOTAL NON-TARGETED VOCs (ppb):	20	7	14	51	ND	ND	ND	46	ND	ND		
TOTAL TARGETED AND NON-TARGETED VOCs (ppb):	48	7	14	55.7	ND	ND	ND	55.1	124.9	250		

ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-ORI

D1848/VOCOW.WK1

DR-833731

Table 8.1-1 (Cont'd)
Summary of Volatile Organic Compounds in Ground Water

DRAI Sample No.:	MW8S	MW9S	MW10S(A)	MW10S(B)
Lab Sample No.:	66292	66295	66293	66294
Date Sampled:	4/28/92	4/28/92	4/28/92	4/28/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech

Targeted VOCs (ppb)				
Benzene	1.8 J	ND	30	19
Bromodichloromethane	ND	ND	ND	ND
Chlorobenzene	ND	13	ND	ND
Chloroethane	2.4 J	ND	ND	ND
Chloroform	ND	ND	ND	ND
1,1-Dichloroethane	46	14	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ND	ND	ND	ND
Ethylbenzene	2.2 J	ND	1.0 J	ND
Toluene	ND	ND	1.7 J	1.2 J
Trichloroethene	ND	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND
Xylenes (Total)	5.2	ND	11	7.7
TOTAL TARGETED VOCs (ppb):	57.6	27	43.7	27.9
Non-Targeted VOCs (ppb)				
Chlorotoluene isomer	17	ND	ND	ND
Unknown	24	18	373	239
Diisopropyl ether	ND	ND	ND	ND
2,3-Dihydro-1H-Indene	24	ND	ND	ND
3-Octanone	ND	ND	37	24
N-Butyl ether	ND	10	44	32
TOTAL NON-TARGETED VOCs (ppb):	65	28	454	295
TOTAL TARGETED AND NON-TARGETED VOCs (ppb):	122.6	55	497.7	322.9

ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-ORI

D1848/VOCGW.WR1

DR 833732

Table 8.1-1 (Cont'd)
Summary of Volatile Organic Compounds in Ground Water
Hatco Corporation - Fords, New Jersey

		MW155									
DRAI Sample No.:	MW7D	MW13S	MW14S	MW15S	Oil Phase	MW16S	MW16D	MW17S(A)	MW17S(B)	MW18S	MW19S
Lab Sample No.:	67315	67313	67317	67320	67324	67322	67316	67318	67319	67314	67321
Date Sampled:	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92
Laboratory:	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.

Targeted VOCs (ppb)												
Benzene	1.5 J	1.6 J	ND	1300 J	ND	540	7.4	680	710	ND	820	
Bromodichloromethane	1.4 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chlorobenzene	1.1 J	ND	ND	ND	ND	ND	2.2 J	ND	ND	ND	ND	
Chloroethane	ND	ND	ND	ND	ND	ND	ND	4600	4700	ND	ND	
Chloroform	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane	ND	3.3 J	ND	ND	ND	ND	ND	1900	1900	ND	ND	
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	180	170	ND	ND	
trans-1,2-Dichloroethene	ND	3.2 J	ND	ND	ND	ND	ND	ND	ND	ND	17 J	
Ethylbenzene	ND	ND	ND	500 J	ND	ND	2.5 J	ND	ND	ND	ND	
Toluene	ND	ND	ND	750 J	ND	1900	5.8	74 J	110 J	ND	1200	
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	2100	2000	ND	ND	
Trichloroethene	ND	ND	ND	ND	ND	84 J	ND	ND	ND	ND	18 J	
Vinyl Chloride	ND	9.0 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Xylenes (Totals)	ND	ND	ND	190000	57000000	ND	ND	39 J	37 J	ND	ND	
TOTAL TARGETED VOCs (ppb):	6.1	17.1	ND	192550	57000000	2524	17.9	9573	9627	ND	2055	

Non-Targeted VOCs (ppb)												
Diisopropyl ether	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
N-Butyl ether	ND	ND	ND	ND	ND	280	39	ND	ND	ND	ND	
6 Methyl-2-heptanone	ND	ND	ND	14000	3200000	1000	7	150	280	ND	1700	
Unknown	ND	ND	ND	ND	ND	430	13	ND	ND	ND	870	
Dimethyl heptane isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	230	
1-Methylethyl Benzene	ND	ND	ND	ND	4900000	ND	ND	ND	ND	ND	ND	
TOTAL NON-TARGETED VOCs (ppb):	6	ND	ND	14000	8100000	1710	59	150	280	ND	2800	

TOTAL TARGETED AND NON-TARGETED VOCs (ppb):	15.1	17.1	ND	206550	65100000	4234	76.9	9723	9907	ND	4855	
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ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289L-(RI)

01997/VOC.WR1

DR 833733

Table 8.1-2
Summary of Volatile Organic Compounds in Ground Water

DRAI Sample No.:	MW1S	MW1D	MW2S	MW2D	MW3S	MW3D	MW4S	MW4D	MW5S	MW6S
Lab Sample No.:	75060	75059	75056	75055	75049	75050	75053	75052	75061	75127
Date Sampled:	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/20/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted VOCs (ppb)										
Benzene	330	ND	2 J	ND	ND	ND	2 J	ND	ND	1 J
Chlorobenzene	ND	ND	3 J	ND	ND	ND	ND	ND	8	ND
Chloroethane	ND	ND	ND	ND	ND	ND	3	ND	ND	48
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	8	ND	ND	6
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	2 J	ND	ND	ND	3 J	1 J	2 J	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	ND	ND	1 J	ND	6	ND	ND	ND	ND	ND
TOTAL TARGETED VOCs (ppb):	332	ND	6	ND	9	1	15	ND	8	55
Non-Targeted VOCs (ppb)										
Acetone	26	560	27	390	ND	ND	ND	ND	10	ND
Hexane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl ether	ND	ND	10	ND	ND	ND	ND	ND	49	5
n-Butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	3
Unknown	78	ND	ND	ND	ND	ND	ND	ND	6	4
Unknown Ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₂ H ₂₂ Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloro-2 methyl benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloro-4 methyl benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₈ H ₁₆ O Ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alkane	ND	38	ND	ND	12	13	ND	ND	ND	ND
Napthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₈ H ₃₆ O Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Cyclopentane	ND	ND	ND	ND	4	ND	ND	ND	ND	ND
2-Octanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butoxy Methyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₇ H ₁₄ Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₂ 1-2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ester Hexanoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl Methyl Benzene Isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ester Octanoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloro-Methyl-benzene Isomer	ND	ND	46	ND	ND	ND	ND	ND	ND	ND
2,4-dimethyl-pentanal	19	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL NON-TARGETED VOCs (ppb):	123	628	83	390	16	13	ND	ND	85	12
TOTAL TARGETED AND NON-TARGETED VOCs (ppb):	455	628	89	390	25	14	15	ND	73	67

ND = not detected.

B = compound detected in method blank and excluded from total.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-001

05-2252/1007VOCs.MRI

DR 833734

Table 8.1-2 (Cont'd)
Summary of Volatile Organic Compounds in Ground Water

DRAI Sample No.:	MW7S	MW7D	MW8S	MW8S	MW10S	MW11S	MW12S	MW13S	MW14S	MW15S _A
Lab Sample No.:	75128	75128	75130	75134	75132	75058	75054	75051	75786	75139
Date Sampled:	10/20/92	10/20/92	10/20/92	10/20/92	10/20/92	10/19/92	10/19/92	10/19/92	11/25/92	10/21/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted VOCs (ppb)											
Benzene	ND	ND	ND	ND	19	1 J	ND	1 J	ND	ND	6,000
Chlorobenzene	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND	ND
Chloroethane	500	ND	2 J	11	2 J	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	17	16	ND	ND	ND	4 J	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	2 J	ND	ND	ND	ND	7	ND	ND
trans-1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	4	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	4 J	ND	7	ND	ND	ND	1 J	320 J	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,200
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	520
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	12	ND	ND	100 J
Total Xylenes	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	12,000

TOTAL TARGETED VOCs (ppb):	500	ND	23	29	34	2	ND	21	8	20,140
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Non-Targeted VOCs (ppb)

Acetone	ND	7	ND	4	10	ND	ND	ND	ND	ND	ND
Hexane	ND	6	ND	19	ND	ND	ND	ND	ND	ND	ND
DI-Isopropyl ether	ND	4	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butyl ether	ND	ND	8	11	21	ND	ND	ND	ND	ND	ND
Unknown	ND	ND	12	56	152	ND	ND	ND	ND	ND	ND
Unknown Ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14,000
C ₁₂ H ₂₄ Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloro-2 methyl benzene	ND	ND	18	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloro-4 methyl benzene	ND	ND	5	ND	ND	ND	ND	ND	ND	ND	ND
C ₈ H ₁₆ O Ketone	ND	ND	ND	ND	9	ND	ND	ND	ND	ND	ND
Unknown Alkane	ND	ND	ND	ND	21	ND	9	ND	ND	ND	ND
Napthalene	ND	ND	ND	ND	13	ND	ND	ND	ND	ND	ND
C ₁₄ H ₂₈ O Hydrocarbon	ND	ND	ND	ND	9	ND	ND	ND	ND	ND	ND
Methyl Cyclopentane	ND	ND	ND	6	ND	ND	ND	ND	ND	ND	ND
2-Octanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butoxy Methyl Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₇ H ₁₄ Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₁ H ₂₂ O Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	780
Methyl Ester Hexanoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	600
Ethyl Methyl Benzene Isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	420
Unknown Alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8,700
Methyl Ester Octanoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	920
Chloro-Methyl-benzene Isomer	ND	ND	ND	ND	ND	120	ND	ND	ND	ND	ND
2,4-dimethyl-pentanal	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL NON-TARGETED VOCs (ppb):	ND	17	40	96	235	120	9	ND	ND	25,400
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TOTAL TARGETED AND NON-TARGETED VOCs (ppb):	500	17	63	125	269	122	9	21	8	45,600
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ND = not detected.

B = compound detected in method blank and excluded from total.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-ORI

03-2252/1092VOCB.WRI

DR 833735

Table 8.1-2 (Cont'd)
Summary of Volatile Organic Compounds in Ground Water

DRAI Sample No.:	MW15S _{pr}	MW16S	MW16D	MW17S	MW18S	MW18S	MW20S	MW21S	MW22S
Lab Sample No.:	75139A	75136	75129	75138	75057	75137	75131	75133	75135
Date Sampled:	10/21/92	10/21/92	10/20/92	10/21/92	10/19/92	10/21/92	10/20/92	10/20/92	10/20/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted VOCs (ppb)									
Benzene	1,400,000	770	200	640	ND	1,200	ND	1 J	ND
Chlorobenzene	ND	ND	2 J	ND	1 J	ND	ND	ND	ND
Chloroethane	ND	ND	73	5,900	ND	ND	ND	ND	440
1,1-Dichloroethane	ND	ND	ND	150 J	ND	ND	ND	ND	24 J
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	10	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	15 J	9	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	50 J	ND	ND	2 J	7	ND
Toluene	930,000	1,100	32	170 J	ND	2,400	ND	ND	ND
Trichloroethene	300,000 J	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	ND	ND	1 J	ND	ND	ND	ND	ND	ND
Total Xylenes	20,000,000	10	5	59	ND	25 J	ND	ND	ND
TOTAL TARGETED VOCs (ppb):	22,630,000	1,995	332	6,909	1	3,625	2	8	464
Non-Targeted VOCs (ppb)									
Acetone	ND	ND	ND	ND	28	ND	ND	ND	ND
Hexane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-Isopropyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butyl ether	ND	140	48	ND	ND	170	ND	ND	ND
Unknown	8,700,000	123	45	ND	ND	ND	ND	ND	ND
Unknown Ketone	11,000,000	840	65	430	ND	2,900	ND	ND	ND
C ₁₂ H ₂₂ Hydrocarbon	ND	ND	13	ND	ND	ND	ND	ND	ND
1-Chloro-2 methyl benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloro-4 methyl benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₈ H ₈ O Ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alkane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Napthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₄ H ₂₂ O Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Cyclopentane	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Octanol	ND	100	ND	ND	ND	ND	ND	ND	ND
Butoxy Methyl Benzene	ND	49	ND	ND	ND	ND	ND	ND	ND
C ₇ H ₁₄ Hydrocarbon	ND	ND	ND	ND	ND	190	ND	ND	ND
C ₁₀ H ₁₈ 1-2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ester Hexanoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethyl Methyl Benzene Isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alcohol	8,200,000	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Ester Octanoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloro-Methyl-benzene Isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-dimethyl-pentanal	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL NON-TARGETED VOCs (ppb):	27,900,000	1,282	172	450	28	3,290	ND	ND	ND
TOTAL TARGETED AND NON-TARGETED VOCs (ppb):	50,530,000	3,147	504	7,399	29	6,885	2	8	464

ND = not detected.

B = compound detected in method blank and excluded from total.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-ORI

93-2252/1027VOCB.NRI

DR 833736

Table 8.1-3
Summary of Base Neutral Compounds in Ground Water

DRAI Sample No.:	MW1D	MW1S	MW2D	MW2S	MW3D	MW3S	MW4S	MW5S	MW6S	MW7S
Lab Sample No. (BNs):	66291	66288	66286	66285	66283	66282	66284	66290	66287	66289
Date Sampled:	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted BNs (ppb)

Acenaphthene	ND	ND	ND	ND	ND	ND	ND	1.1 J	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis (2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	3.1 J	ND	ND	ND	2.6 J
Butylbenzyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Butyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophrone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	22	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	0.69 J	ND	ND	ND	ND	ND	ND

TOTAL TARGETED BNs (ppb):	ND	ND	ND	0.69	ND	3.1	22	1.1	ND	2.6
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Non-Targeted BNs (ppb)

Unknown	ND	15070	ND	ND	30	ND	ND	ND	225	280
Chloro-methyl-benzene isomer	ND	ND	ND	20	ND	ND	ND	ND	ND	ND
Dichloro-methyl-benzene isomer	ND	ND	ND	10	ND	ND	ND	ND	ND	ND
Trichloro-methyl-benzene isomer	ND	ND	14	ND	ND	ND	ND	ND	ND	ND
Unknown acids	ND	42130	ND	ND	ND	ND	ND	ND	159	209
Trimethyl-hexanoic acid	ND	ND	ND	ND	ND	ND	ND	ND	12	20
Chloro-benzene	12	ND	ND	ND	ND	ND	ND	ND	ND	ND
(1,1-dimethylethyl)-methyl-phenol isomer	ND	ND	ND	ND	ND	ND	ND	21	ND	ND
bis(1,1-dimethylethyl)-methyl-phenol isomer	ND	ND	ND	ND	ND	ND	ND	46	ND	ND
2,3-dihydro-1H-indene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown phthalate ester	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1[oxybis(2,1-ethane dihydroxy)]bis-butane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL NON-TARGETED BNs (ppb):	12	57200	14	30	30	ND	ND	67	396	517
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TOTAL TARGETED AND NON-TARGETED BNs (ppb):	12	57200	14	30.69	30	3.1	22	68.1	396	519.6
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ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-ORI

01666/2808.W21

DR 833737

Table 8.1-3 (Cont'd)
Summary of Base Neutral Compounds in Ground Water

DRAI Sample No.:	MW8S	MW9S	MW10S(A)	MW10S(B)
Lab Sample No. (BNs):	66292	66295	66293	66294
Date Sampled:	4/28/92	4/28/92	4/28/92	4/28/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech

Targeted BNs (ppb)

Acenaphthene	1.1 J	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND
bis (2-ethylhexyl) phthalate	ND	ND	190 J	170
Butylbenzyl phthalate	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	30 J
DI-n-Butyl phthalate	ND	ND	ND	ND
DI-n-Octyl phthalate	ND	ND	ND	30 J
Isophorone	ND	ND	ND	ND
Naphthalene	5.4 J	ND	ND	ND
Phenanthrene	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND

TOTAL TARGETED BNs (ppb):	6.5	ND	190	230
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Non-Targeted BNs (ppb)

Unknown	117	131	16140	7690
Chloro-methyl-benzene isomer	ND	ND	ND	ND
Dichloro-methyl-benzene isomer	ND	ND	ND	ND
Trichloro-methyl-benzene isomer	ND	ND	ND	ND
Unknown acids	ND	ND	56270	45320
Trimethyl-hexanoic acid	ND	ND	ND	ND
Chloro-benzene	ND	ND	ND	ND
(1,1-dimethylethyl)-methyl-phenol isomer	ND	ND	ND	ND
bis(1,1-dimethylethyl)-methyl-phenol isomer	ND	ND	ND	ND
2,3-dihydro-1H-Indene	12	ND	ND	ND
Unknown phthalate ester	ND	ND	850	1290
1,1[oxybis(2,1-ethane dilyoxy)]bis-butane	ND	12	ND	ND

TOTAL NON-TARGETED BNs (ppb):	129	143	73260	54900
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TOTAL TARGETED AND NON-TARGETED BNs (ppb):	135.5	143	73450	54930
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ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-ORI

91849/BNOW.WZ1

DR 833738

Table 8.1-3 (Cont'd)
Summary of Base Neutral Compounds in Ground Water
Hatco Corporation - Fords, New Jersey

DRAI Sample No.:	MW7D	MW13S	MW14S	MW15S	Oil Phase	MW16D	MW16S	MW17S(A)	MW17S(B)	MW18S	MW19S
Lab Sample No. (BNs):	67315	67313	67317	67320	67324	67316	67322	67318	67319	67314	67321
Date Sampled:	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92
Laboratory:	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.
Targeted BNs (ppb)											
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	29	23	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	0.39 J	ND	ND
bis (2-ethylhexyl) phthalate	ND	ND	2.3 J	17000	430000 J	13	280	5.4 J	21	ND	1700
Butylbenzyl phthalate	ND	ND	ND	6400	110000 J	9.1 J	160 J	33	58	ND	650
Diethyl phthalate	ND	ND	ND	2800	ND	2.2 J	850	67	120	ND	580
Di-n-Butyl phthalate	ND	ND	ND	9400	200000 J	25 J	500	67	130	ND	770
Di-n-Octyl phthalate	ND	ND	ND	3200	ND	9.8 J	47 J	ND	ND	ND	250
Fluorene	ND	ND	ND	56 J	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	2.2 J	ND	ND	ND	ND	ND
Naphthalene	ND	3.4 J	0.35 J	62 J	ND	0.57 J	38 J	230	230	ND	86 J
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	0.76 J	0.49 J	ND	ND
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppb):	ND	3.4	2.65	38918	740000	61.87	1875	432.16	582.88	ND	4036
Non-Targeted BNs (ppb)											
Unknown	ND	6	ND	220000	36100000	12	14150	2070	3680	ND	8750
Xylene Isomer	ND	ND	ND	71000	6300000	ND	ND	120	140	ND	ND
Octanone Isomer	ND	ND	ND	ND	1600000	ND	ND	ND	ND	ND	ND
Octanol Isomer	ND	ND	ND	ND	900000	ND	ND	ND	ND	ND	ND
Unknown Organic Acid	ND	ND	ND	ND	12000000	ND	ND	ND	ND	ND	ND
Dioctyladipate	ND	ND	ND	ND	500000	ND	ND	ND	ND	ND	ND
Toulene	ND	ND	ND	ND	ND	ND	880	ND	ND	ND	ND
Methyl-heptane isomer	ND	ND	ND	65000	ND	26	4200	630	990	ND	ND
2-Octanol	ND	ND	ND	ND	ND	ND	2600	ND	ND	ND	ND
1 Phenyl-ethanone	ND	ND	ND	ND	ND	ND	490	ND	ND	ND	4690
Unknown phthalate ester	ND	ND	ND	39000	ND	195	ND	ND	ND	ND	3600
bis(2-ethylhexyl)-decanedioate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	410
Trimethoxyacetophenone isomer	ND	ND	ND	130000	ND	ND	ND	ND	ND	ND	ND
Diaceto-myristin isomer	ND	ND	ND	26000	ND	ND	ND	ND	ND	ND	ND
Tetradecyl tetradecanoate	ND	ND	ND	15000	ND	ND	ND	ND	ND	ND	ND
n Butyl ether	ND	ND	ND	ND	ND	24	ND	160	180	ND	ND
Unknown hydrocarbon	ND	ND	ND	ND	ND	84	ND	542	1500	ND	ND
(butoxymethyl) Benzene	ND	ND	ND	ND	ND	ND	ND	200	200	ND	ND
C ₁₂ H ₂₀ O isomer	ND	ND	ND	ND	ND	ND	ND	140	ND	ND	ND
C ₁₂ H ₂₀ O hydrocarbon	ND	ND	ND	ND	ND	ND	ND	130	ND	ND	ND
C ₁₂ H ₂₂ hydrocarbon	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL NON-TARGETED BNs (ppb):	6	6	ND	500000	57400000	341	22320	3992	6690	ND	17450
TOTAL TARGETED AND NON-TARGETED BNs (ppb):	6	9.4	2.65	604918	58140000	402.87	24195	4424.16	7272.88	ND	21486

ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289-OR1

01907/BN.WRI

DR 833739

Table 8.1-4
Summary of Base Neutral Compounds in Ground Water

DRAI Sample No.:	MW18	MW1D	MW28	MW2D	MW38	MW3D	MW48	MW4D	MW58	MW68
Lab Sample No. (BNA):	75060	75069	75068	75069	75069	75069	75069	75062	75061	75127
Dpte Sampled:	10/10/92	10/10/92	10/10/92	10/10/92	10/10/92	10/10/92	10/10/92	10/10/92	10/10/92	10/20/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted BNs (ppb)

Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	1 J	ND
Is (2-ethylhexyl) phthalate	ND	2 J	ND	4 J	ND	ND	ND	ND	ND	ND
Butylbenzyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethyl phthalate	ND	ND	ND	ND	ND	3 J	ND	ND	ND	ND
Di-n-Butyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	35	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	1 J	ND	ND	ND	ND	ND	ND	ND

TOTAL TARGETED BNs (ppb):	ND	2	1	4	ND	3	35	ND	1	ND
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Non-Targeted BNs (ppb)

Unknown	13,820	ND	ND	ND	ND	16	ND	ND	12	131
Benzoic Acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phthalic Anhydride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1'-(Oxybis(2,1-Ethenedioxy))-Butene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-Butyldienebis(2-(1,1-Dimethylethyl)-	ND	20	ND	ND	ND	ND	9	ND	ND	ND
1,2,4-Trichloro-methyl-benzene isomer	ND	ND	ND	19	ND	ND	ND	ND	ND	ND
Chloro-methyl-Benzene isomer	ND	ND	14	ND	ND	ND	ND	ND	ND	ND
Dichloro-methyl-Benzene isomer	ND	ND	28	ND	ND	ND	ND	ND	ND	ND
1-Chloromethyl Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
(1,1-Dimethylethyl)-Phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Bis(1,1-Dimethylethyl)-2,6-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,5-Bis(1,1-Dimethylethyl)-4-hydroxy-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	8	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Add	33,790	ND	ND	ND	ND	ND	ND	ND	28	98
2-(1,1-Dimethylethyl)methyl phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	28	ND
2,6-Bis(1,1-Dimethylethyl)-methyl-phenol	ND	ND	ND	ND	ND	ND	ND	ND	48	ND
Unknown Ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alkene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1(3H)-isobenzofuranone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₂ H ₁₈ Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Organic acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Butanoate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanoic acid with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9,10-Anthracenedione with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzenepropionic acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown phthalate ester	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown acid with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-ethyl-1,4-dimethyl-cyclohexane with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-methyl-2-Heptanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Octanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-ethyl-1-Hexanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
(1,1-Dimethylethyl)methyl Phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloro-methyl-Benzene isomer	ND	ND	84	ND	ND	ND	ND	ND	ND	ND

TOTAL NON-TARGETED BNs (ppb):	47,810	28	103	19	ND	16	9	ND	25	229
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TOTAL TARGETED AND NON-TARGETED BNs (ppb):	47,810	30	104	20	ND	16	14	ND	26	229
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ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 04C109-081

03-2752/10932MW.WE1

DR 833740

Table 8.1-4 (Cont'd)
Summary of Base Neutral Compounds in Ground Water

DRAI Sample No.:	MW78	MW7D	MW88	MW98	MW108	MW118	MW128	MW138	MW148	MW158(aq.)
Lab Sample No. (BNA):	75128	75128	75130	75134	75132	75068	75064	75061	75786	75139
Date Sampled:	10/20/92	10/20/92	10/20/92	10/20/92	10/20/92	10/19/92	10/19/92	10/19/92	11/25/92	10/21/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted BNA (ppb)

Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Is (2-ethylhexyl) phthalate	ND	ND	ND	ND	210	ND	3 J	ND	8 J	73,000
Butylbenzyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	55,000
Dioethyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	17,000
Di-n-Butyl phthalate	ND	ND	ND	ND	ND	8 J	ND	ND	ND	48,000
Di-n-Octyl phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ruorene	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	18 J	ND	ND	8 J	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND	1 J	ND	ND	ND	ND

TOTAL TARGETED BNA (ppb):	ND	ND	ND	ND	215	9	3	8	8	171,000
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Non-Targeted BNA (ppb)

Unknown	9	ND	ND	323	19,420	353	ND	9	29	472,000
Benzole Add	ND	ND	ND	ND	ND	ND	ND	740	ND	ND
Phthalic Anhydride	ND	ND	ND	ND	ND	ND	ND	14	ND	ND
1,1'-(Oxybis(2,1-Ethane dihydroxy))-Butane	ND	ND	ND	ND	ND	ND	ND	9	ND	ND
4,4'-Butyldienebis[2-(1,1-Dimethylethyl)-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichloro-methyl-benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloro-methyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloro-methyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloromethyl Benzene isomer	ND	ND	ND	ND	ND	84	ND	ND	ND	ND
(1,1-Dimethylethyl)-Phenol isomer	ND	ND	ND	ND	ND	17	ND	ND	ND	ND
2,6-Bis (1,1-Dimethylethyl)-2,8-	ND	ND	ND	ND	ND	12	ND	ND	ND	ND
3,5-Bis (1,1-Dimethylethyl)-4-hydroxy-	ND	ND	ND	ND	ND	631	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Add	209	ND	ND	ND	16,900	ND	ND	ND	ND	621,000
2-(1,1-Dimethyl ethyl)methyl phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Bis (1,1-Dimethylethyl)-methyl-phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Ketone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Alcohol	ND	ND	ND	ND	ND	ND	ND	ND	ND	21,000
Unknown Alkene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown phthalate	ND	ND	ND	ND	300	ND	ND	ND	ND	193,000
1(3H)-Isobenzofuranone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C ₁₂ H ₁₈ Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Organic acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl Butanoate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexanoic acid with unknown	ND	ND	ND	ND	600	ND	ND	ND	ND	ND
9,10-Anthracenedione with unknown	ND	ND	ND	ND	340	ND	ND	ND	ND	ND
Benzene propionic acid	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown phthalate ester	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown acid with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-ethyl-1,4-dimethyl-cyclohexene with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-methyl-2-Heptanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	99,000
2-Octanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	320,000
2-ethyl-1-Hexanol	ND	ND	ND	ND	ND	ND	ND	ND	ND	43,000
Xylene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Hydrocarbon	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
(1,1-Dimethylethyl)methyl Phenol isomer	ND	ND	ND	ND	ND	39	ND	ND	ND	ND
Trichloro-methyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL NON-TARGETED BNA (ppb):	215	ND	ND	323	37,520	1,109	ND	772	36	1,069,000
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TOTAL TARGETED AND NON-TARGETED BNA (ppb):	215	ND	ND	323	38,045	1,112	9	778	64	1,240,000
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ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C169-CR1

03-2152/1092BNA.WK1

DR 833741

Table 8.1-4 (Cont'd)
Summary of Base Neutral Compounds in Ground Water

ORAI Sample No.:	MW158(pd)	MW163	MW160	MW175	MW183	MW195	MW206	MW218	MW225
Lab Sample No. (BNA):	75139A	75136	75129	75138	75057	75137	75131	75133	75135
Date Sampled:	10/21/92	10/21/92	10/20/92	10/21/92	10/19/92	10/21/92	10/20/92	10/20/92	10/20/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Targeted BNs (ppb)

Acenaphthene	ND	ND	ND	29 J	ND	ND	ND	ND	ND
Bis (2-ethylhexyl) phthalate	20,000,000	130 J	25	1,200	ND	ND	ND	ND	ND
Butylbenzyl phthalate	9,000,000	84 J	ND	730	ND	ND	ND	ND	ND
Diethyl phthalate	2,800,000	640	110	110 J	ND	880	ND	ND	ND
Di-n-Butyl phthalate	12,000,000	140 J	ND	840	ND	ND	ND	ND	ND
Di-n-Octyl phthalate	1,800,000 J	ND	ND	110 J	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	460	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL TARGETED BNs (ppb):	45,000,000	974	135	3,279	ND	880	ND	ND	ND
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Non-Targeted BNs (ppb)

Unknown	155,000,000	110,280	1,442	37,800	ND	51,000	1,118	24	818
Benzic Acid	ND	8,000	ND	ND	ND	ND	ND	ND	ND
Phthalic Anhydride	ND	ND	24	ND	ND	ND	ND	11	ND
1,1'-(Oxybis(2,1-Ethanedioxy))-Butane	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-Bis(2,1-Ethanedioxy)-2,2'-(1,1-Dimethylethyl)-	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichloro-methyl-benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloro-methyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloro-methyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Chloromethyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
(1,1-Dimethylethyl)-Phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Bis (1,1-Dimethylethyl)-2,5-	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,6-Bis (1,1-Dimethylethyl)-4-hydroxy-	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Add	71,000,000	11,670	804	5,400	ND	ND	ND	ND	ND
2-(1,1-Dimethyl ethyl)methyl phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Bis (1,1-Dimethylethyl)-methyl-phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Ketone	ND	2,900	110	1,200	ND	ND	ND	ND	ND
Unknown Alcohol	ND	1,800	88	ND	ND	ND	ND	ND	ND
Unknown Alkene	ND	640	38	ND	ND	ND	ND	ND	ND
Unknown phthalate	82,000,000	890	127	ND	ND	ND	ND	ND	ND
1(3H)-Isobenzofuranone	ND	ND	140	ND	ND	ND	ND	ND	ND
C ₁₀ H ₈ Hydrocarbon	ND	ND	33	ND	ND	ND	ND	ND	ND
Methyl phenol isomer	ND	1,300	38	ND	ND	ND	ND	ND	ND
Unknown Organic acid	ND	ND	ND	ND	ND	237,500	111	ND	839
Methyl Butanoate	ND	ND	ND	ND	ND	ND	82	ND	99
Hexanoic acid with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND
9,10-Anthracenedione with unknown	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene propionic acid	ND	ND	ND	ND	ND	ND	ND	ND	82
Unknown phthalate ester	ND	ND	ND	ND	ND	23,600	ND	ND	ND
Unknown acid with unknown	ND	ND	ND	1,100	ND	ND	ND	ND	ND
1-ethyl-1,4-dimethyl-cyclohexane with unknown	ND	ND	ND	440	ND	ND	ND	ND	ND
6-methyl-2-Heptanone	16,000,000	ND	ND	ND	ND	ND	ND	ND	ND
2-Octanol	47,000,000	ND	ND	ND	ND	ND	ND	ND	ND
2-ethyl-1-Hexanol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene isomer	16,000,000	ND	ND	ND	ND	ND	ND	ND	ND
Unknown Hydrocarbon	4,000,000	ND	ND	ND	ND	ND	ND	ND	ND
(1,1-Dimethylethyl)methyl Phenol isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloro-methyl-Benzene isomer	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL NON-TARGETED BNs (ppb):	342,000,000	133,050	2,817	43,000	ND	315,000	1,311	35	1,348
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TOTAL TARGETED AND NON-TARGETED BNs (ppb):	567,700,000	133,054	2,947	47,079	ND	615,000	1,311	35	1,348
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ND = not detected.

J = estimated concentration detected below the Method Detection Limit.

ORAI Job No. 06C109-CR1
03-2352/1092BQW.V01

DR 833742

Table 8.1-5
Summary of Pesticides and PCBs in Ground Water

DRAI Sample No.:	MW1D	MW1S	MW2D	MW2S	MW3D	MW3S	MW4S	MW5S	MW6S	MW7S
Lab Sample No.:	66291	66288	66286	66285	66283	66282	66284	66290	66287	66289
Date Sampled:	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92	4/28/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Pesticides (ppb)

Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor Epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PESTICIDES (ppb):	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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Polychlorinated Biphenyls (PCBs) (ppb):

Arochlor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arochlor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arochlor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arochlor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arochlor 1248	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arochlor 1254	0.90	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arochlor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppb):	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
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ND = not detected.

DRAI Job No. 86C289-ORI

D1848/PCBOW.WRI

DR 833743

Table 8.1-5 (Cont'd)
Summary of Pesticides and PCBs in Ground Water

DRAI Sample No.:	MW8S	MW9S	MW10S(A)	MW10S(B)
Lab Sample No.:	66292	66295	66293	66294
Date Sampled:	4/28/92	4/28/92	4/28/92	4/28/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech

Pesticides (ppb)

Aldrin	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND
Chlordane	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND
Endrin	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND
Heptachlor Epoxide	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND

TOTAL PESTICIDES (ppb):	ND	ND	ND	ND
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Polychlorinated Biphenyls (PCBs) (ppb):

Arochlor 1016	ND	ND	ND	ND
Arochlor 1221	ND	ND	ND	ND
Arochlor 1232	ND	ND	ND	ND
Arochlor 1242	ND	ND	ND	ND
Arochlor 1248	ND	ND	34	43
Arochlor 1254	ND	ND	ND	ND
Arochlor 1260	ND	ND	ND	ND

TOTAL PCBs (ppb):	ND	ND	34	43
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ND = not detected.

DRAI Job No. 86C289-ORI
D1848/PCBOW.WK1

DR 833744

Table 8.1-5 (Cont'd)
Summary of Pesticides and PCBs in Ground Water
Hatco Corporation - Fords, New Jersey

DRAI Sample No.:	MW7D	MW13S	MW14S	MW15S	MW15s Oil Phase	MW16D	MW16S	MW17S(A)	MW17S(B)	MW18S	MW19S
Lab Sample No.:	67315	67313	67317	67320	67324	67316	67322	67318	67319	67314	67321
Date Sampled:	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92	5/14/92
Laboratory:	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.	Env. Res.

Pesticides (ppb)

Aldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TOTAL PESTICIDES (ppb):	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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Polychlorinated Biphenyls (PCBs) (ppb):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	ND	ND	43	5600	2800000	13	85	19	22	ND	550
Aroclor 1254	ND	ND	20	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppb):	ND	ND	63	5600	2800000	13	85	19	22	ND	550
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ND = not detected.
NA = not analyzed.

DRAI Job No. 86C289-OR1
01987/PCB.FH1

DR 833745

Table 8.1-6
Summary of Pesticides and PCBs in Ground Water

DRAI Sample No.:	MW1S	MW1D	MW2S	MW2D	MW3S	MW3D	MW4S	MW4D	MW5S	MW6S
Lab Sample No.:	75060	75059	75056	75055	75049	75050	75053	75052	75061	75127
Date Sampled:	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/19/92	10/20/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Pesticides (ppb)

Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor Epoxide	ND	ND	ND	0.3	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PESTICIDES (ppb):	ND	ND	ND	0.3	ND	ND	ND	ND	ND	ND
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Polychlorinated Biphenyls (PCBs) (ppb):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppb):	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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ND = not detected.

B = compound detected in method blank and excluded from total.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289GW92

03-2232/1092PCBs.WK1

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Table 8.1-6 (Cont'd)
Summary of Pesticides and PCBs in Ground Water

DRAI Sample No.:	MW7S	MW7D	MW8S	MW9S	MW10S	MW11S	MW12S	MW13S	MW14S	MW15S _{AJ}
Lab Sample No.:	75128	75126	75130	75134	75132	75058	75054	75051	76786	75139
Date Sampled:	10/20/92	10/20/92	10/20/92	10/20/92	10/20/92	10/19/92	10/19/92	10/19/92	11/25/92	10/21/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Pesticides (ppb)

Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Heptachlor Epoxide	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND

TOTAL PESTICIDES (ppb):	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND
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Polychlorinated Biphenyls (PCBs) (ppb):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	ND	ND	ND	ND	41	ND	ND	ND	60	24000
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	ND	17	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppb):	ND	ND	ND	ND	41	ND	ND	ND	77	24,000
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ND = not detected.

B = compound detected in method blank and excluded from total.

J = estimated concentration detected below the Method Detection Limit.

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D3-2252/1092PCBs.WK1

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Table 8.1-6 (Cont'd)
Summary of Pesticides and PCBs in Ground Water

DRAI Sample No.:	MW15S _{pr}	MW16S	MW16D	MW17S	MW18S	MW19S	MW20S	MW21S	MW22S
Lab Sample No.:	75139A	75138	75129	75138	75057	75137	75131	75133	75135
Date Sampled:	10/21/92	10/21/92	10/20/92	10/21/92	10/19/92	10/21/92	10/20/92	10/20/92	10/20/92
Laboratory:	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech	Envirotech

Pesticides (ppb)

Aldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND
alpha-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND
beta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	ND	ND	ND	ND	ND	ND	ND	ND	ND
delta-BHC	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDT	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDD	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulfate	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor Epoxide	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toxaphene	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PESTICIDES (ppb):	ND	ND	ND	ND	ND	ND	ND	ND	ND
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Polychlorinated Biphenyls (PCBs) (ppb):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	13000000	120	28	510	ND	810	ND	ND	ND
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppb):	13000000	120	28	510	ND	810	ND	ND	ND
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ND = not detected.

B = compound detected in method blank and excluded from total.

J = estimated concentration detected below the Method Detection Limit.

DRAI Job No. 86C289GW92

03-2252/1092PCBS.WK1

DR 833748

10.0 CONTAMINANT FATE AND TRANSPORT

The chemical contaminants identified at Hatco can basically be categorized in three groups; PCBs, B/Ns and VOCs. The migration potential and environmental fate of PCBs and the B/Ns detected at the site tend to be similar. However, because of the magnitude of the contamination, these groups will be discussed separately. VOC migration potential and environmental fate differ significantly from that of PCBs and B/Ns. Chemical characteristics for PCBs, B/Ns and VOCs are presented on Tables 10.0-1 and are discussed below for each group of chemicals.

10.1 PCBs

PCBs are organic compounds in which chlorine atoms have been substituted for hydrogen atoms on a biphenyl molecule. The general molecular formula for a PCB is $C_{12}H_{10-n}Cl_n$ where n is between 1 and 10. PCBs were manufactured by Monsanto Chemical Company under the trade name of Aroclor. Aroclors are characterized by a four digit number. The Aroclors identified at Hatco are Aroclor 1248 and Aroclor 1254. The first two digits, 12, indicate a biphenyl molecule or 12 carbons, and the last two numbers indicate the percentage by weight of chlorine in the mixture. PCBs are oily liquids; the higher chlorinated forms are darker in appearance, more viscous and tend to be more persistent in the environment.

The vapor pressure of a chemical is a measure of the volatility of the pure chemical. Henry's Law Constant is the air/water partition coefficient and is a function of a chemical's vapor pressure and water solubility. For chemicals with high organic carbon partition coefficients, such as PCBs, the more conventional approaches for determining Henry's Law Constant may not be appropriate. For example, Henry's Law Constant for Aroclors 1248 and 1254 is on the order of 10^{-3} atm x cu.m./mol, the same relative order as for the VOCs. The vapor pressures for Aroclors 1248 and 1254 are on the order of 10^{-4} and 10^{-5} mm H₂O @ 20°C, respectively. VOCs have vapor pressures as high as 10^{-3} mm H₂O 20°C. The calculated Henry's Law Constant for PCBs indicates that volatilization may be a significant loss mechanism. However, based on the vapor pressure for PCBs, a measurable parameter, volatilization is unlikely to occur to a significant degree.

The solubility of a compound, octanol water partition coefficient (K_{ow}) and organic carbon partition coefficient (K_{oc}) are all parameters which describe the relative affinity of a compound to sorb onto soil particles or remain in the soil solution. K_{oc} , when multiplied by the mass fraction of organic carbon (f_{oc}) in the soil, results in the partition coefficient, K_d . This term is an indication of the relative distribution of a chemical in the sorbed versus dissolved state. The smaller the K_d , the less likely the compound will sorb to the soil particles; the higher the K_d , the greater the tendency for the compound to exist in the sorbed state.

PCBs are very insoluble in water, i.e., the low ppb range. Aroclor 1248 and Aroclor 1254 have K_{ows} in the range of 10^6 and K_{ocs} in the range of 10^5 . These numbers indicate a high affinity to sorb to the soil particles, low relative mobility and high retardation. Therefore, PCBs tend to remain in the

soil and are typically not leached to the ground water or lost to the atmosphere.

PCBs have been detected at low concentrations in the ground water at Hatco. Both filtered samples and non-filtered ground water samples from several wells have been found to contain PCBs; the filtered samples always contain less. Even though PCBs may have reached the ground water, because they are relatively immobile due to their high retardation, the rate of PCB movement through the aquifer will be extremely slow when compared to the rate of ground water flow through the aquifer.

The heavier Aroclor, i.e., 1254, is not subject to significant biodegradation in the natural soil/aquifer environment. Biodegradation of Aroclor 1248 under natural conditions is not anticipated to be a significant loss pathway. These PCB compounds will persist in the environment for long periods of time (decades) and have a tendency to bioaccumulate.

10.2 Base Neutral Compounds

The B/Ns of concern at the Hatco site are primarily phthalate compounds and naphthalene. These compounds have been identified in elevated concentrations throughout site soils. Phthalates, bis(2-ethylhexyl) phthalate and diethyl phthalate, in particular, have been detected in the ground water beneath the site.

The phthalate compounds exhibit similar behavior in terms of migration potential and environmental fate as the PCBs. However, because they generally are several orders of magnitude more soluble than PCBs, Henry's Law Constant provides a more valid description of the air/water partitioning of the chemicals. Henry's Law Constant ranges from on the order of 10^{-5} to 10^{-12} atm x cu.m/mol @ 25 degrees C for bis(2-ethylhexyl) phthalate and di-n-octyl phthalate, respectively. VOCs have Henry's Law Constants on the order of 10^{-2} to 10^{-3} atm x cu.m/mol @ 25 degrees C. As with the PCBs, volatilization to the atmosphere will not be a significant loss mechanism of phthalates to the environment.

The solubilities of the phthalate compounds present in the soil at the Hatco site range from 896 mg/l to 0.4 mg/l for diethyl phthalate and bis(2-ethylhexyl) phthalate, respectively. The Kocs for the phthalates range from 69 to 9.77×10^6 for diethyl phthalate and di-n-octyl phthalate, respectively. Bis(2-ethylhexyl)phthalate has a Koc of 1×10^5 . Diethyl phthalate has the highest relative mobility of the phthalates in the soil/aquifer environment while di-n-octyl phthalate can be considered effectively immobile due to high retardation.

Several phthalate compounds have been detected in the ground water, predominantly bis(2-ethylhexyl)phthalate and diethyl phthalate. Once in the ground water, bis(2-ethylhexyl) phthalate will move very slowly relative to the flow rate of the ground water because of its high retardation potential. Diethyl phthalate will not be retained to the same degree as bis(2-ethylhexyl) phthalate but some retardation of the compound will occur.

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Naphthalene is an order of magnitude more volatile than the most volatile phthalate. However, it is not considered a VOC but a semi-volatile compound. Volatilization losses of this compound would also not be expected to be significant. Naphthalene has a water solubility of 31 mg/l. Naphthalene has a Koc of 1.28×10^3 , which falls within the range of Kocs for the phthalate compounds identified at Hatco.

The phthalates, in particular, tend to persist in the natural environment and are not readily subject to biodegradation. Naphthalene may be subject to limited biodegradation, although biodegradation under natural conditions will likely not be a significant removal mechanism of naphthalene from the Hatco site.

10.3 Volatile Organic Compounds

The VOCs have relatively large Henry's Law Constants, on the order of 10^{-2} and 10^{-3} atm x avg/mol. If present in surficial soils, members of this class of compounds can readily be lost to the environment through volatilization.

VOCs tend to be more water soluble than B/Ns and PCBs and, therefore, more likely to migrate from the soil water to the ground water. Based on the relatively low octanol water partition coefficient of most VOCs (Table 10.0-1), the relative mobility is higher than the mobility of the B/Ns and PCBs. However, some retardation of the VOCs will occur.

At Hatco, the majority of the VOC impact is to the ground water, not to the soil. This impact to the ground water is as expected based on the contaminant fate and transport properties of VOCs in the environment. Once in the ground water, the VOCs will migrate but not at the same rate as the ground water because of their affinity, however small, for the aquifer matrix.

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11.0 ASSESSMENT OF HUMAN HEALTH IMPACT

The RI work at Hatco was completed ahead of the schedule set by the ACO and the draft RI work plan. However, a risk assessment was not conducted as part of the RI (DRAI, August 1992). A human health risk assessment is proposed in the Feasibility Study (FS) Work Plan (DRAI, April 1993) to be conducted as part of the FS. Background work on the risk assessment is on-going.

The proposed risk assessment will identify:

- (1) Human receptors in the paths of pollution migration, mobility of pollutants and specific routes to target organs.
- (2) Receiving media and/or ecological groups and migration pathways of critical pollutants.

The proposed risk assessment focuses on an evaluation of human health impacts, but may also expand to define potentially impacted ecological groups. A preliminary evaluation of the potential for biomagnification and/or bioaccumulation of critical pollutants in the food chain may be presented in the risk assessment or in the future as part of an ecological assessment, if required.

Some background work has already been conducted in support of the risk assessment. Toxicity data have been compiled for each compound identified and are presented on Tables 11.0-1 for carcinogenicity effects and on Table 11.0-2 for subchronic and chronic toxicity effects (each table is presented in 3 parts; VOCs, B/Ns and PCBs). The data on these tables are from the USEPA Health Effects Assessment Summary Tables, Annual FY-1991 and will be updated, if necessary, for the risk assessment and FS.

11.1 Carcinogenicity Effects

Both Arochlors 1248 and 1254 are classified by the USEPA as Group B2 - Probable Human Carcinogens. This classification signifies that there is sufficient evidence of carcinogenicity in animals with inadequate, or lack of, evidence in humans. These compounds are considered probable carcinogens based on available ingestion and oral slope factors. Information on inhalation is not available.

Three B/N compounds of concern at the site are also classified as Group B2 compounds. They are bis(2-ethylhexyl) phthalate, chrysene and benzyl chloride. These compounds are probable carcinogens from an ingestion exposure scenario; slope factors are available. Inhalation information is not available.

Isophorone is considered a Group C carcinogen, which is a possible human carcinogen with limited evidence of carcinogenicity in animals and inadequate or lack of human data. An oral slope factor has been determined; no inhalation information is available.

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- (6) Based on the evaluation of the horizontal and vertical extent of the "hot spots" identified in the AECs above, the total estimated volume of impacted soil is about 3,500 cubic yards.
- (7) Non-Actionable AECs. In 7 AEC's, no VOCs, B/Ns or PCBs above the present NJDEPE soil cleanup criteria were detected. These areas (AEC 9E, 10A, 11A, 16, 17, 18A and 20) require no further action at this time.

Ground Water (AEC 15)

- (8) Ground water beneath the Hatco site was investigated through shallow and deep wells. The shallow wells penetrated the shallow water zone, which is within the top 20 feet of the site sediments, including fill material and poorly-sorted sand with clay lenses.

The deep water zone is primarily in a well-sorted sand layer found below a layer of gray clay. This clay layer was encountered at most deep well locations.

- (9) Ground water flow in both shallow and deep aquifer zones is generally to the south with a major component toward the southwestern portion of the site (Crow's Mill Creek).
- (10) Based on water level measurements in the 6 pairs of shallow and deep wells, the ground water elevation in the shallow aquifer zone is higher than in the deep zone at the background well pair MW3, and at pair MW16 located in the former Ponds 1 and 2 area. The ground water elevation in the deep well MW4d (near the former K024 area) has always been measured to be higher than that found in well MW4s. The ground water elevation measured in the well pairs MW1 and MW7 (located near the capped, unused lagoons) is higher than that measured in the deep zone.
- (11) Based on the results of short-term pumping tests (about 5 hours) conducted with 5 shallow and 3 deep wells, well yields ranged from about 1 to 8 gpm. One well (MW21s) pumped dry within a few minutes.
- (12) Calculated transmissivities for the aquifer zones ranged from less than 100 to about 30,000 gpd/ft.
- (13) Analyses of water level differences (and their changes across the site) demonstrate that the two aquifer zones are interconnected beneath the site. Contamination introduced into the shallow zone migrates downward into the deeper zone as well as laterally. Contaminant distribution within the shallow zone indicates that the VOC plume originates from near the Ester I complex area, toward former Ponds 1 and 2, and the former muck area to the southern property line at the capped, unused lagoons. The B/N plume is of similar shape as the VOC plume. In addition, PCB concentrations in some of the wells within the plume were also detected either in the free product layer or the water phase.
- (14) The ground water at the Hatco site is presently classified by the NJDEPE as GW-2 or II-A, an actual or potential source of potable water.

However, the ground water in the immediate vicinity of the site has not been used as a source of domestic and/or municipal water supply. Based on the ground water investigation, it was established that contaminated ground water flows off-site toward the south.

Sewer System (AEC 22)

- (15) Based on evaluation and analysis of soil samples obtained near the various sewer lines at elevations above and below the lines, it was determined that soil contamination at these locations is associated with surface manufacturing and disposal activities and not with the operation of the sewer lines themselves. The contaminant groups found in the soils near sewer lines are (in a decreasing order) PCBs, B/Ns and VOCs.

General

- (16) The extent of off-site soil and ground water contamination was not delineated. However, based on ground water flow patterns and contaminant concentrations in the water, it is concluded that some off-site impact on ground water exists.

12.2 Recommendations

The following recommendations address areas where additional RI activities are necessary prior to the completion of the Feasibility Study.

- (1) The identified "hot spots" in AECs 8, 9B, 9D, 11B, 12, 13 and 18B should be further sampled in order to delineate the precise volume of impacted soil. About 2 to 4 soil borings per "hot spot" will have to be completed and analyzed for the specific contaminant found at that spot.
- (2) As part of the on-going IRM (known as Project 51), the extent of the free phase product found in wells MW15s, MW17s and seeps near the Ester I tank farm (AEC 9A) are undergoing further delineation and continued product recovery.
- (3) In order to determine the potential for an off-site impact on ground water, the ground water data and information from the former chemical plant downgradient of the Hatco site should be compiled and evaluated.

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Table 6.4-1
Summary of Volatile Organic Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	Q28	P24	Q22	Q25	Q27	124(P28.25)	124(P28.25)	125(Q/P23.5)	125(Q/P23.5)
Depth (ft below surface):	8.0-8.5'	8.0-8.5'	8.0-8.5'	8.0-8.5'	8.0-8.5'	1.5-2.0'	11.0-11.5'	1.5-2.0'	11.0-11.5'
Lab Sample No.:	302003	302007	302023	300012	300016	NA	NA	NA	NA
Date Sampled:	3/24/88	3/25/88	3/25/88	3/24/88	3/24/88	12/17/87	12/17/87	12/16/87	12/16/87
Laboratory:	York	York	York	York	York	NA	NA	NA	NA

Targeted VOCs (ppm)										
Acetone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	0.01 JB	ND	0.002 J	0.02 B	0.01 B	ND	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dbromochloromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (Total)	ND	0.01 B	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	0.02 B	0.21	ND	0.1 B	0.11 B	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	0.02	0.04	0.004 J	0.13	0.07	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	0.06	ND	ND	ND	ND	ND	0.02
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	0.01	ND	ND	0.01	ND	ND	ND	ND	ND
Trichlorofluoromethane	0.01	ND	ND	0.05	0.01	ND	ND	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene (Total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED VOCs (ppm):	0.03	0.28	0.01	0.24	0.1	ND	ND	ND	0.02	ND
TOTAL NON-TARGETED VOCs (ppm):	0.15	0.57	0.02	0.15	0.17	5.4	10.05	2.8	0.07	ND
TOTAL TARGETED AND NON-TARGETED VOCs (ppm):	0.18	0.85	0.03	0.42	0.27	5.4	10.05	2.8	0.09	ND

See notes at end of table.

DRAI Job No. 86C2890RT

DR 834113

Table 6.4-2
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	O24	O26	O28	O28	O28	O28	O28	O28	O28	P24	P24
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	8.0-8.5'	0.0-0.5'	1.5-2.0'	
Lab Sample No.:	312013	306001	306002	306003	300017	300018	302002	302003	302004	302005	
Date Sampled:	3/29/88	3/29/88	3/29/88	3/29/88	3/24/88	3/24/88	3/24/88	3/24/88	3/25/88	3/25/88	
Laboratory:	York	York	York	York	York	York	York	York	York	York	
Targeted BNs (ppm)											
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	0.23	ND	ND	ND	ND	ND	ND	2.8
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	13	1.2	170	240	ND	ND	150	170	ND	310	
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	0.13	ND	0.88	1.9	ND	ND	ND	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DI-n-Butylphthalate	2.1	0.13	30	140	ND	ND	100	250	ND	2700	
DI-n-Octylphthalate	0.41	ND	1.7	32	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	0.07 B	0.14 B	ND	0.34	ND	ND	2.7	ND	ND	2.4	
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Continued											

See notes at end of table.

DRAI Job No. 86C2890RI

03-2101/7A-BB.WK1

DR 834114

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	O24	O26	O26	O26	O26	O26	O26	O26	O26	P24	P24
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	8.0-8.5'	0.0-0.5'	1.5-2.0'	
Lab Sample No.:	312013	306001	306002	306003	300017	300018	302002	302003	302004	302005	
Date Sampled:	3/29/88	3/29/88	3/29/88	3/29/88	3/24/88	3/24/88	3/24/88	3/24/88	3/25/88	3/25/88	
Laboratory:	York	York	York	York	York	York	York	York	York	York	

Targeted BNs (ppm)

Continued											
Fluoranthene	0.17	ND	ND	0.28	ND	ND	ND	ND	ND	ND	4
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	0.85 B	0.48 B	0.37	19	ND	ND	4.7	20	0.4	3100	
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	0.21	ND	6.1	9.7	ND	ND	2.1	6.1	ND	160	
Pyrene	0.21	ND	0.23	0.22	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	16.47	1.35	209.28	443.67	ND	ND	259.6	446.1	0.4	6279	
TOTAL NON-TARGETED BNs (ppm):	49	6.2	65	134	ND	ND	127	151	ND	2278	
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	65.47	9.53	264.28	577.67	ND	ND	386.6	599.1	0.4	8557	

See notes at end of table.

DRAI Job No. 86C289ORI

03-21101/7A-BB.WRI

DR 834115

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	P24	P24	P25	P27	Q22	Q22	Q22(A)	Q22(B)	Q22	Q24
Depth (ft below surface):	4.0-4.5'	8.0-8.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	4.0-4.5'	8.0-8.5'	0.0-0.5'
Lab Sample No.:	302006	302007	312018	312019	302019	302020	302021	302022	302023	312009
Date Sampled:	3/25/88	3/25/88	3/29/88	3/29/88	3/25/88	3/25/88	3/25/88	3/25/88	3/25/88	3/29/88
Laboratory:	York	York	York	York	York	York	York	York	York	York
Targeted BNs (ppm)										
Acenaphthene	5.8	7.9	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	5.2	ND	0.11	ND	ND	ND	5.8	ND	0.43
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	8.7	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(ghi)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	290	230	52 B	140 B	ND	ND	ND	180	10	160 B
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	2000	88	1.8	15	ND	ND	230	300	ND	6.7
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	ND	ND	9	ND	1
Di-n-Butylphthalate	2800	2900	62	53	39	ND	780	1000	93	120
Di-n-Octylphthalate	ND	ND	2	5.1	ND	ND	71	86	7.6	6
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	2.5	0.13	0.16	ND	ND	ND	ND	1.3	0.4
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Continued:										

See notes at end of table.

DRAI Job No. 86C289ORI

03-21 01/7A-88.WR1

DR 834116

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	P24	P24	P25	P27	Q22	Q22	Q22(A)	Q22(B)	Q22	Q24
Depth (ft below surface):	4.0-4.5'	8.0-8.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	4.0-4.5'	8.0-8.5'	0.0-0.5'
Lab Sample No.:	302006	302007	312018	312019	302019	302020	302021	302022	302023	302009
Date Sampled:	3/25/88	3/25/88	3/29/88	3/29/88	3/25/88	3/25/88	3/25/88	3/25/88	3/25/88	3/25/88
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Continued										
Fluoranthene	ND	5	0.29	0.28	ND	ND	ND	6.5	ND	ND
Fluorene	1.9	1.8	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	3300	2000	8	1.1	19	1.2	1100	980	79	38
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	90	140	3.3	2.5	ND	ND	160	260	11	16
Pyrene	ND	6.9	0.82	0.42	ND	ND	ND	ND	ND	2.3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	6486	5387	78.34	77.07	58	1.2	2341	2556	201.0	169.83
TOTAL NON-TARGETED BNs (ppm):	5279	2620	1.0	145	130	ND	1525	3506	424	25
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	13767	8207	79.34	222.07	188	1.2	3866	6452	625.0	214.83

See notes at end of table.

DRAI Job No. 86C2890RI

03-2101/7A-BB.WRI

DR 834117

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	Q25	Q25	Q25	Q25	Q26	Q27	Q27	Q27	Q27	Q28
Depth (ft below surface):	0.0-0.5'	1.5-2.0'	4.0-4.5'	8.0-8.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	8.0-8.5'	0.0-0.5'
Lab Sample No.:	300009	300010	300011	300012	312017	300013	300014	300015	300016	312007
Date Sampled:	3/24/88	3/24/88	3/24/88	3/24/88	3/20/88	3/21/88	3/24/88	3/24/88	3/24/88	3/29/88
Laboratory:	York	York	York	York	York	York	York	York	York	York
Targeted BNs (ppm)										
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	11	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	230	430	130	250	ND	210	67	61	ND	15 B
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.5
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-Butylphthalate	1700	7400	4800	4200	ND	2400	1000	2000	1000	73
Di-n-Octylphthalate	180	ND	ND	ND	ND	ND	ND	ND	ND	0.99
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	22	1.2	ND	ND	ND	5.8	6.7	ND	0.61
Dimethylphthalate	ND	3.2	ND	ND	ND	ND	1.8	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Continued										

See notes at end of table.

DRAI Job No. 86C289ORI

03-2101/7A-BB.WE1

DR 834118

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	Q25	Q25	Q25	Q25	Q26	Q27	Q27	Q27	Q27	Q28
Depth (ft below surface):	0.0-0.5'	1.5-2.0'	4.0-4.5'	8.0-8.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	8.0-8.5'	0.0-0.5'
Lab Sample No.:	300009	300010	300011	300012	312017	300013	300014	300015	300016	312007
Date Sampled:	3/24/88	3/24/88	3/24/88	3/24/88	3/20/88	3/21/88	3/24/88	3/24/88	3/24/88	3/29/88
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Continued										
Fluoranthene	ND	6.7	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	160	560	48	330	ND	370	44	56	670	7
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	91	450	9.2	16	ND	49	9.7	24	ND	9
Pyrene	ND	76	ND	ND	ND	ND	ND	ND	ND	0.83
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	2351	8959	4988	4796	ND	3029	1128	2148	1670	97.93
TOTAL NON-TARGETED BNs (ppm):	6084	1394	2632	1395	1229	2097	826	764	619	6
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	9045	10353	7620	6191	1229	5126	1954	2912	2289	103.93

See notes at end of table.

DRAI Job No. 86C2890RI

DJ-2161/7A-BN.WE1

DR 834119

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	R23	R24	R24	R24	R25	R27	S22	124(P26.25)	124(P26.25)	125(Q/R23.5)
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	11.0-11.5'	0.0-0.5'
Lab Sample No.:	308020	302024	302025	302026	308016	312005	308017	NA	NA	NA
Date Sampled:	3/28/88	3/25/88	3/25/88	3/25/88	3/28/88	3/24/88	3/25/88	12/17/87	12/17/87	12/16/87
Laboratory:	York	York	York	York	York	York	York	NA	NA	NA

Targeted BNs (ppm)

Acenaphthene	ND	ND	3.4	ND	ND	ND	4.7	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	2.4	ND	ND	ND	2.4	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl) ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	150	ND	250	ND	4.7	180 B	260	560	1.1	120
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	38	ND	ND	3.9	6.6	ND	0.12	57
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	ND	4.4	ND	ND	ND
Di-n-Butylphthalate	4900	4.8	2300	3.8	88	180	96	1900	3	350
Di-n-Octylphthalate	ND	ND	ND	ND	ND	0.97	4	ND	ND	36
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	ND	28	ND	0.45 B	0.62	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Continued

See notes at end of table.

DRAI Job No. 86C2890RI

03-3101/7A-SH-WR1

DR 834120

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	R23	R24	R24	R24	R25	R27	S22	124(P20.25)	124(P20.25)	125(O/R23.5)
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	11.0-11.5'	0.0-0.5'
Lab Sample No.:	306020	302024	302025	302026	306016	312005	306017	NA	NA	NA
Date Sampled:	3/28/88	3/29/88	3/25/88	3/25/88	3/28/88	3/24/88	3/25/88	12/17/87	12/17/87	12/16/87
Laboratory:	York	York	York	York	York	York	York	NA	NA	NA

Targeted BNs (ppm)

Continued										
Fluoranthene	ND	ND	11	ND	ND	ND	9.1	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	4.6	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	3300	3.1	15000	19	81.8	57	750	900	11	21000
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	5	63	ND	1.1	15	29	15 J	0.08 J	36
Pyrene	ND	ND	21	ND	ND	2.2	14	ND	0.08 J	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	8380	12.6	17747	22.8	93.8	259.69	1165	5375	15.36	21599
TOTAL NON-TARGETED BNs (ppm):	548	61	3040	ND	155	24	540	6022	13.4	9430
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	8928	73.6	20787	22.8	251.8	283.69	1725	9397	28.76	31029

See notes at end of table.

DRAI Job No. 86C289ORI

03-2181/7A-08.W11

DR 834121

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	125(Q/R23.5)	155(OP27.5)	155(OP27.5)
Depth (ft below surface):	11.0-11.5'	0.0-0.5'	2.0-2.5'
Lab Sample No.:	NA	NA	NA
Date Sampled:	12/16/87	3/11/88	3/11/88
Laboratory:	NA	NA	NA

Targeted BNs (ppm)

Acenaphthene	ND	ND	ND
Acenaphthylene	ND	ND	ND
Anthracene	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND
bis(2-ethylhexyl)phthalate	0.14	96	2.4
4-Bromophenyl-Phenylether	ND	ND	ND
Butylbenzylphthalate	ND	11	1.7
Carbazole	ND	ND	ND
4-Chloroaniline	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND
Chrysene	ND	ND	ND
Di-n-Butylphthalate	0.27	250	31
Di-n-Octylphthalate	ND	ND	1
Dibenz(a,h)anthracene	ND	ND	ND
Dibenzofuran	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND
Diethylphthalate	ND	ND	ND
Dimethylphthalate	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND
Continued			

See notes at end of table.

DRAI Job No. 86C2890RI

03-2181/7A-BN.WE1

DR 834122

Table 6.4-2 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (K024 Pre-excavation)

DRAI Sample No.:	125(O/R23.5)	155(OP27.5)	155(OP27.5)
Depth (ft below surface):	11.0-11.5'	0.0-0.5'	2.0-2.5'
Lab Sample No.:	NA	NA	NA
Date Sampled:	12/16/87	3/11/88	3/11/88
Laboratory:	NA	NA	NA

Targeted BNs (ppm)

Continued			
Fluoranthene	ND	ND	ND
Fluorene	ND	ND	ND
Hexachlorobenzene	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND
Hexachloroethane	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND
Isophorone	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND
Naphthalene	16	11 J	0.78
2-Nitroaniline	ND	ND	ND
3-Nitroaniline	ND	ND	ND
4-Nitroaniline	ND	ND	ND
Nitrobenzene	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND
Phenanthrene	ND	13	0.7
Pyrene	ND	4	0.44 J
1,2,4-Trichlorobenzene	ND	ND	ND
TOTAL TARGETED BNs (ppm):	16.41	385	38.02
TOTAL NON-TARGETED BNs (ppm):	27.6	604	265.1
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	44.21	889	303.12

See notes at end of table.

DRAI Job No. 86C289ORI

03-3181/7A-00.W21

DR 834123

Table 6.4-3
Summary of Acid Extractables in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	O28	P24	Q25	Q25	Q25	Q27	Q27	Q27	R24
Depth (ft below surface):	8.0-8.5'	8.0-8.5'	0.0-0.5'	1.5-2.0'	8.0-8.5'	0.0-0.5'	1.5-2.0'	8.0-8.5'	0.0-0.5'
Lab Sample No.:	302003	302007	300009	300010	300012	300013	300014	300016	302024
Date Sampled:	03/24/88	03/25/88	03/24/88	03/24/88	03/24/88	03/24/88	03/24/88	03/24/88	03/25/88
Laboratory:	York	York	York	York	York	York	York	York	York

Targeted AEs (ppm)

4-Chloro-3-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL TARGETED AEs (ppm):	ND	ND	ND	ND	ND	ND	ND	ND	ND
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ND = not detected.

DRAI Job No. 86C289ORI

J = estimated concentration detected below the contract required quality control limit.

03-2181/7A-AS.WK1

DR 834124

Table 6.4-3 (Cont'd)
Summary of Acid Extractables in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.: R24
Depth (ft below surface): 1.5-2.0'
Lab Sample No.: 302025
Date Sampled: 03/25/88
Laboratory: York

Targeted AEs (ppm)

4-Chloro-3-Methylphenol	ND	
2-Chlorophenol	ND	
2,4-Dichlorophenol	ND	
2,4-Dimethylphenol	ND	
4,6-Dinitro-2-Methylphenol	ND	
2,4-Dinitrophenol	ND	
2-Methylphenol	ND	
4-Methylphenol	ND	
2-Nitrophenol	ND	
4-Nitrophenol	ND	
Pentachlorophenol	ND	
Phenol	ND	
2,4,5-Trichlorophenol	ND	
2,4,6-Trichlorophenol	ND	

TOTAL TARGETED AEs (ppm):	ND
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ND = not detected.

DRAI Job No. 86C289ORI

J = estimated concentration detected below the contract required quality control limit. 03-2181/7A-AE.WK1

DR 834125

Table 6.4-4
Summary of PCBs in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.:	O24	O26	O26	O28	P22	P24	P24	Q23	Q26	Q27	Q27	R22
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	1.5-2.0'	0.0-0.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	0.0-0.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	0.0-0.5'
Lab Sample No.:	312013	306001	306002	300017	312010	302004	302005	312008	312017	300013	300014	300019
Date Sampled:	3/29/88	3/28/88	3/28/88	3/24/88	3/29/88	3/25/88	3/25/88	3/29/88	3/24/88	3/24/88	3/24/88	3/28/88
Laboratory:	York	York	York	York	York	York	York	York	York	York	York	York

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.15	0.59	9.4	1.9	ND	ND	ND	3.7	ND	1.6	2.6	ND
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppm):	0.15	0.59	9.4	1.9	ND	ND	ND	3.7	ND	1.6	2.6	ND
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 15%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

NA = not available.

DRAI Job No. 86C3890R1

03-2181/7A-PCB.FRI

DR 834126

Table 6.4-4 (Cont'd)
Summary of PCBs in Soil
AEC 7A (K024 Pre-excavation)

DRAI Sample No.:	R24	R25	R26	125(Q/R 23.5)	125(Q/R 23.5)	133(FF4.25)	133(FF4.25)	155(O/P 27.5)	155(O/P 27.5)
Depth (ft below surface):	1.5-2.0'	0.0-0.5'	0.0-0.5'	0.0-0.5'	11.0-11.5'	0.0-0.5'	4.0-4.5'	0.0-0.5'	2.0-2.25'
Lab Sample No.:	302005	300016	312006	NA	NA	NA	NA	NA	NA
Date Sampled:	3/25/88	3/28/88	3/29/88	12/16/87	12/16/87	12/16/87	12/16/87	3/11/88	3/11/88
Laboratory:	York	York	York	NA	NA	NA	NA	NA	NA

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	17	1.3	ND	ND	ND	ND	1.8	38	150
Aroclor 1254	ND	ND	ND	ND	ND	0.56	ND	ND	28
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppm):	17	1.3	ND	ND	ND	0.56	1.8	38	178
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 25%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

NA = not available.

DRAI Job No. 86C189ORI

03-2101/7A-PCB.W11

DR 834127

Table 6.4-5
Summary of Metals in Soil
AEC 7A (KO24 Pre-excavation)

DRAI Sample No.: 124(P20.25) 124(P20.25)
 Depth (ft below surface): 0.0-0.5' 11.0-11.5.0'
 Lab Sample No.: NA NA
 Date Sampled: 12/17/87 12/17/87
 Laboratory: NA NA

Metals (ppm)			
Aluminum	ND		ND
Antimony	ND		ND
Arsenic	2.16		1.48
Barium	ND		ND
Beryllium	1.19		ND
Cadmium	ND		ND
Calcium	ND		ND
Chromium	43.9		9.85
Cobalt	ND		ND
Copper	239		13.3
Iron	ND		ND
Lead	369		14.8
Magnesium	ND		ND
Manganese	ND		ND
Mercury	ND		0.41
Nickel	97.6		ND
Potassium	ND		ND
Selenium	ND		ND
Silver	ND		ND
Sodium	ND		ND
Thallium	ND		ND
Vanadium	ND		ND
Zinc	453		14

ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

N = matrix spike sample recovery not within control limits.

* = difference between sample and laboratory duplicate was > 20%.

NA = not available.

DRAI Job No. 86C2890RI

03-2101/7A-MET.WE1

DR 834128

Table 6.4-6
Summary of Petroleum Hydrocarbons in Soil
AEC 7A (Pre-excavation)

DRAI Sample No.:	O24	O25	O26	O26	O26	O27	O28	O28	O28	P23(A)	P23(B)
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'
Lab Sample No.:	312013	312014	306001	306002	306003	312021	300017	300018	302002	312011	312012
Date Sampled:	03/28/88	03/29/88	03/29/88	03/29/88	03/29/88	03/29/88	03/29/88	03/29/88	03/24/88	03/29/88	03/29/88
Laboratory:	York	York	York	York	York	York	York	York	York	York	York

Petroleum Hydrocarbons (ppm):	37	340	14	160	39	120	125	<10	570	3100	2000
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

N = matrix spike sample recovery not within control limits.

* = difference between sample and laboratory duplicate was > 20%.

NA = not available.

DRAI Job No. 86C2890RI

03-2181/7A-PHC.WE1

DR 834129

Table 6.4-6 (Cont'd)
Summary of Petroleum Hydrocarbons in Soil
AEC 7A (Pre-excavation)

DRAI Sample No.:	P24	P24	P24	P25	P27	P28	Q22	Q22(A)	Q22(B)	Q24	Q25
Depth (ft below surface):	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	4.0-4.5'	4.0-4.5'	0.0-0.5'	0.0-0.5'
Lab Sample No.:	302004	302005	302006	NA	NA	NA	302019	302021	302022	NA	300009
Date Sampled:	03/25/88	03/25/88	03/25/88	NA	NA	NA	03/25/88	03/25/88	03/25/88	NA	03/24/88
Laboratory:	York	York	York	York	York	York	York	York	York	York	York

Petroleum Hydrocarbons (ppm):	<10	1300	730	270	990	3200	110	440	650	1200	360
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

N = matrix spike sample recovery not within control limits.

* = difference between sample and laboratory duplicate was > 20%.

NA = not available.

DRAI Job No. 86C2890RI

03-2181/7A-98C.WT1

DR 834130

Table 6.4-6 (Cont'd)
Summary of Petroleum Hydrocarbons in Soil
AEC 7A (Pre-excavation)

DRAI Sample No.:	Q25	Q25	Q26	Q27	Q27	Q27	Q28	F23	F24	F24	F24
Depth (ft below surface):	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'	1.5-2.0'	4.0-4.5'
Lab Sample No.:	300010	300011	NA	300013	300014	300015	NA	306020	302024	306025	306026
Date Sampled:	03/24/88	03/24/88	NA	03/24/88	03/24/88	03/24/88	NA	03/28/88	03/25/88	03/25/88	03/25/88
Laboratory:	York	York	York	York	York	York	York	York	York	York	York
Petroleum Hydrocarbons (ppm):	100	150	120	290	18	840	<10	220	950	980	280

ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

N = matrix spike sample recovery not within control limits.

* = difference between sample and laboratory duplicate was > 20%.

NA = not available.

DRAI Job No. 86C289ORI

DJ-3191/7A-98C.WE1

DR 834131

Table 6.4-6 (Cont'd)
Summary of Petroleum Hydrocarbons In Soil
AEC 7A (Pre-excavation)

DRAI Sample No.:	F25	F26	F27	S22
Depth (ft below surface):	0.0-0.5'	0.0-0.5'	0.0-0.5'	0.0-0.5'
Lab Sample No.:	306016	NA	NA	306017
Date Sampled:	03/28/88	NA	NA	03/28/88
Laboratory:	York	York	York	York

Petroleum Hydrocarbons (ppm):	22	830	1900	770
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

N = matrix spike sample recovery not within control limits.

* = difference between sample and laboratory duplicate was > 20%.

NA = not available.

DRAI Job No. 86C289ORI

03-2101/7A-PHC.WE1

DR 834132

Table 6.4-7
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	R22	R22	R22	MW13SP/Q26.25	MW13SP/Q26.25	B-1	B-2	B-3	B-4	B-5
Depth (ft below surface):	1.5-2.0'	4.0'	8.0'	1.5-2.0'	12.5-13.0'	8.0-10'	8.0-10'	8.0-10'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	E224352	E224353	E224354	E210336	E210335	1348002	1348003	1348004	1348005	1378006
Date Sampled:	09/14/92	09/14/92	09/14/92	4/9/92	4/10/92	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89
Laboratory:	Accutest	Accutest	Accutest	Accutest	Accutest	York	York	York	York	York
Targeted BNs (ppm)										
Acenaphthene	0.039 J	ND	ND	ND	ND	ND	ND	ND	0.14 J	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	0.16	ND	0.11 J	ND	ND
Benzo(a)anthracene	0.016 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	0.24 J	0.035 J	0.18 J	ND	ND	19	93	0.57	1.3	ND
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	0.035 J	ND	ND	ND	ND	0.71	4.8	ND	0.12 J	ND
Carbazole	0.014 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.024 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
DI-n-Butylphthalate	0.19 J	ND	ND	2.8	ND	31 *	95	11	10	23
DI-n-Octylphthalate	ND	ND	ND	ND	ND	1.3	3.1	ND	0.17 J	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	0.063 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	ND	ND	ND	ND	0.31 J	ND	0.89	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	0.18 J	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Continued										

See notes at end of table.

DRAI Job No. 86C2890RI

03-2101/7A-BR-WR1

DR-834133

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEG 7A (K024 Post-excavation)

DRAI Sample No.:	R22	R22	R22	MW138P/Q26.25	MW138P/Q26.25	B-1	B-2	B-3	B-4	B-5
Depth (ft below surface):	1.5-2.0'	4.0'	8.0'	1.5-2.0'	12.5-13.0'	8.0-10'	8.0-10'	8.0-10'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	E224352	E224353	E224354	E210336	E210335	348002	48003	348004	348005	378006
Date Sampled:	09/14/92	09/14/92	09/14/92	4/9/92	4/10/92	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89
Laboratory:	Accutest	Accutest	Accutest	Accutest	Accutest	York	York	York	York	York

Targeted BNs (ppm)

Continued										
Fluoranthene	0.075 J	ND	ND	ND	ND	ND	ND	ND	0.12 J	ND
Fluorene	0.031 J	ND	ND	ND	ND	0.11 J	ND	0.13	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	0.11 J	ND	ND	ND	ND
2-Methylnaphthalene	0.4 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	5.8 D	ND	0.76	1.4	ND	27 *	380	7.5	27 *	310
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	0.12 J	ND	ND	0.05 J	ND	3.2	3.5	3.5	0.72	ND
Pyrene	0.062 J	ND	ND	ND	ND	0.64	ND	0.76	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	7.11	0.04	0.94	4.25	ND	85.72	579.4	24.26	59.57	355
TOTAL NON-TARGETED BNs(ppm):	1.35	0.49	0.15	5.44	1.22	21.27	60.5	39.5	172.3	46.49
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	8.46	0.53	1.07	7.69	1.22	104.99	639.2	63.76	211.87	379.49

See notes at end of table.

DRAI Job No. 86C289ORI

03-1101/7A-88.001

DR 834134

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	B-6	B-7	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'
Lab Sample No.:	1348007	1348008	1348009	1348010	1348011	1348029	1348030	1348035	1348036	1348037
Date Sampled:	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89
Laboratory:	York	York	York	York	York	York	York	York	York	York
Targeted BNs (ppm)										
Acenaphthene	2.4 J	0.6	0.28 J	0.15 J	ND	0.66	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	0.12 J	0.09 J	0.47 J	ND	0.54	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	11 J	7.7	14	6.6	0.26 J	29 *	120 *	9	ND	4.6
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	0.62	0.55	0.33 J	ND	1.7	1.8	1.8	ND	0.89
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	0.33 J	ND	ND	0.45	ND	ND	ND
Di-n-Butylphthalate	31 J	20	21 *	66 *	1.4	32 *	26 *	120 *	0.25 J	28 *
Di-n-Octylphthalate	ND	0.88	1.3	0.69	ND	50 *	5.3	ND	ND	0.62
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	0.8	0.51	0.5	0.2 J	2.1	1	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Continued										

See notes at end of table.

DRAI Job No. 86C2890RI

93-2101/7A-89.021

DR 834135

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	B-6	B-7	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'
Lab Sample No.:	1348007	1348008	1348009	1348010	1348011	1348029	1348030	1348035	1348036	1348037
Date Sampled:	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Continued										
Fluoranthene	ND	1.6	0.92	0.33 J	ND	1.1	ND	ND	ND	ND
Fluorene	ND	0.44	0.22 J	ND	ND	ND	0.21 J	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	NQ	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	0.44	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	1400 *	67 *	26 *	37 *	1.4	67 *	27 *	1.5	0.1 J	3.5
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	6.2 J	2.3	2.1	11	0.17 J	13	6.6	3	ND	0.93
Pyrene	ND	0.66	0.5	1.7	0.16 J	2.7	0.85	0.67	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	1461	102.72	67.47	125.1	5.59	199.6	189.65	135.77	0.35	55.54
TOTAL NON-TARGETED BNs(ppm):	96.7	21.99	46.82	74.1	39.66	54.06	13.3	9.6	0.93	5.59
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	1548	124.71	116.29	199.2	45.27	253.66	202.95	145.37	1.28	61.13

See notes at end of table.

DRAI Job No. 86C289ORI

03-1101/7A-SH.WE1

DR 834136

Table 8.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	B-16	B-17	B-18	S-1(A)	S-1(B)	S-2	S-3	S-4(A)	S-4(B)	S-5
Depth (ft below surface):	0.0-5.0'	0.0-5.0'	0.0-5.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	1348038	1348039	1348040	1348012	1348013	1348014	1348015	1348016	1348017	1348018
Date Sampled:	9/14/89	9/14/89	9/14/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)										
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	0.42	ND	3.8 J
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND	0.19 J	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	6.3	ND	5.2	58 *	34 *	9.4	4.3	7.4	1.3	ND
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	2.7	ND	ND	0.19 J	0.12 J	ND	0.28 J	0.51	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.64	ND	ND	ND	ND	ND	ND	ND	ND	ND
DI-n-Butylphthalate	37 *	0.6	44 *	11	7.9	0.95	11	21	5.6 J	200 J
DI-n-Octylphthalate	0.84	ND	1.5	2.8	2.0	ND	ND	2.6	ND	ND
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	0.21 J	ND	0.12 J	1	0.19 J	ND	ND	0.17 J	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Continued										

See notes at end of table.

DRAI Job No. 86C289OR1

93-2181/7A-BN-WR1

DR834137

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	B-16	B-17	B-18	S-1(A)	S-1(B)	S-2	S-3	S-4(A)	S-4(B)	S-5
Depth (ft below surface):	0.0-5.0'	0.0-5.0'	0.0-5.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	1348038	1348039	1348040	1348012	1348013	1348014	1348015	1348016	1348017	1348018
Date Sampled:	9/14/89	9/14/89	9/14/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Continued										
Fluoranthene	0.2 J	ND	ND	ND	ND	ND	ND	0.32 J	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	0.17 J	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	0.25 J	ND	ND	ND	ND	ND
Naphthalene	7.1	0.18 J	7	10	8.6	0.97	11	19 *	5.8	4000 *
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	2.4	0.11 J	4.1	0.78	0.58	ND	1.0	2.1	0.19 J	11 J
Pyrene	1.4	ND	0.43	0.31 J	0.28 J	ND	0.32 J	0.38	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	58.79	0.89	62.35	84.08	84.12	11.32	27.0	54.26	12.69	4215
TOTAL NON-TARGETED BNs(ppm):	9.74	1.08	8.39	42.46	52.6	1.62	7.25	25.01	3.2	102.8
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	68.53	1.97	70.74	126.54	136.72	12.94	34.25	79.27	15.89	4318

See notes at end of table.

DRAI Job No. 86C289ORI

03-2101/7A-BN.WR1

DR 834138

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (K024 Post-excavation)

DRAI Sample No.:	S-6	S-7	S-8(A)	S-8(B)	S-9	S-10(A)	S-10(B)	S-11	S-12	S-13
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	1348019	1348020	1348021	1348022	1348023	1348024	1348025	1348026	1348031	1348032
Date Sampled:	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/14/89	9/14/89
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)											
Acenaphthene	2.3 J	ND	0.50	0.37 J	0.75	0.53	ND	0.26 J	1.2	2	
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34 J	
Anthracene	ND	ND	0.12 J	ND	0.10 J	0.11 J	ND	ND	ND	ND	
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	0.59	ND	
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Benzo(k)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
bis(2-ethylhexyl)phthalate	12 J	ND	14	5.1	27 *	75 *	39 *	270 *	120 *	170 *	
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Butylbenzylphthalate	ND	ND	1.4	0.82	7.4	1.8	0.65	2.8	6.6	5.7	
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chrysene	ND	ND	ND	ND	ND	ND	ND	ND	0.6	ND	
Di-n-Butylphthalate	140	30 J	9.8	5.8	16 *	30 *	17 *	36 *	29 *	130 *	
Di-n-Octylphthalate	ND	ND	0.93	0.68	5.6	6.7	1.3	16 *	12	29 *	
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Diethylphthalate	ND	ND	0.12 J	ND	ND	0.35 J	0.31 J	ND	0.33 J	0.26 J	
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

Continued

See notes at end of table.

DRAI Job No. 86C289ORI

03-2101/7A-00.WS1

DR 834139

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	S-6	S-7	S-8(A)	S-8(B)	S-9	S-10(A)	S-10(B)	S-11	S-12	S-13
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	1348019	1348020	1348021	1348022	1348023	1348024	1348025	1348026	1348031	1348032
Date Sampled:	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/13/89	9/14/89	9/14/89
Laboratory:	York	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Continued										
Fluoranthene	ND	ND	0.77	0.66	3	3.3	ND	2.6	7.3	1.7
Fluorene	ND	ND	ND	0.25 J	0.73	0.53	ND	0.34 J	0.85	0.94
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	970	880	23 *	11	23 *	30 *	12	18 *	62	46 *
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	12 J	3.1 J	2.4	1.2	3.5	4.3	1.3	4.7	9.8	13
Pyrene	ND	ND	0.83	0.7	1.3	1.2	ND	1.7	2.4	2.6
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	1136	913.1	53.87	26.48	86.38	153.62	71.56	352.6	252.57	401.54
TOTAL NON-TARGETED BNs(ppm):	120.8	90.22	13.83	9.21	75.59	314.6	9.76	27.37	94.1	145.5
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	1257	943.32	67.7	35.69	161.97	468.22	81.32	379.97	346.67	547.04

See notes at end of table.

DRAI Job No. 86C289ORI

03-3101/7A-00.001

DR 834140

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	S-14	S-15	S-16	S-17	S-18	S-19(A)	S-19(B)	S-20	S-21
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'
Lab Sample No.:	1348033	1348034	1348041	1348042	1348043	1348044	1348045	1348046	1348047
Date Sampled:	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89
Laboratory:	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	0.17 J	ND	0.36	26	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	0.11 J	ND	1.2	0.62
Benzo(a)anthracene	ND	ND	ND	0.71	ND	1.2	0.75	4.4	ND
Benzo(a)pyrene	ND	1.10	ND	ND	ND	0.6	0.38	1.6	ND
Benzo(b)fluoranthene	ND	0.97	ND	ND	ND	0.25 J	ND	0.56	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	ND	0.75	ND	ND	ND	ND	ND	0.49	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	40 *	2.2	2.4	9	46	4.3	4.3	1.10	14
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	0.81	0.77	0.52	3	ND	1.8	1.4	ND	1.5
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	1	ND	1.4	ND	2.4	1.3	7.6	0.42
Di-n-Butylphthalate	29 *	12	33 *	34 *	750 *	14	15	ND	18
Di-n-Octylphthalate	0.85	ND	2.6	2.6	ND	ND	ND	ND	0.43
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ND	ND	ND	0.11 J	ND	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND	ND	ND	ND	ND

Continued

See notes at end of table.

DRAI Job No. 86C289ORI

03-2101/7A-SH-WR1

DR-834141

Table 6.4-7 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 7A (K024 Post-excavation)

DRAI Sample No.:	S-14	S-15	S-16	S-17	S-18	S-19(A)	S-19(B)	S-20	S-21
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'
Lab Sample No.:	1348033	1348034	1348041	1348042	1348043	1348044	1348045	1348046	1348047
Date Sampled:	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89	9/14/89
Laboratory:	York	York	York	York	York	York	York	York	York

Targeted BNs (ppm)

Continued									
Fluoranthene	ND	1.3	ND	0.48	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2.5	1.9	0.82	28 *	670 *	21	16	12	11
2-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	1.1	1.2	1.7	3.7	28	2.2	1.6	17	6.5
Pyrene	0.55	1.2	ND	2.9	ND	5.4	3.1	ND	2.2
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	74.81	24.50	41.04	66.26	1518	63.26	43.83	45.95	54.87
TOTAL NON-TARGETED BNs(ppm):	8.45	6.91	4.9	22.29	3260	12.92	16.13	84.3	41.2
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	83.26	31.47	45.94	108.55	4778	66.18	59.96	130.25	95.87

See notes at end of table.

DRAI Job No. 86C2890RI

DS-2181/7A-BB.951

DR 834142

Table 6.4-8
Summary of PCBs in Soil
AEC 7A (K024 Post-excavation)

DRAI Sample No.:	MW13S(P/Q28.25)	MW13S(P/Q28.25)	S-1(A)	S-1(B)	S-2	S-3	S-4(A)	S-4(B)	S-5	S-6	S-7
Depth (ft below surface):	1.5-2.0'	12.5-13.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'
Lab Sample No.:	E210338	E210335	1348012	1348013	1348014	1348015	1348016	1348017	1348018	1348019	1348020
Date Sampled:	4/9/92	4/9/92	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89
Laboratory:	Accutest	Accutest	York	York	York	York	York	York	York	York	York

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.12	ND	20	10	0.33	3.7	12	25	17	10	3.2
Aroclor 1254	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppm):	0.17	ND	20	10	0.33	3.7	12	25	17	10	3.2
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 25%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

NA = not available.

DRAI Job No. 86C289ORI

03-2101/7A-PCB.WR1

DR 834143

Table 6.4-8 (Cont'd)
Summary of PCBs in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	S-8(A)	S-8(B)	S-9	S-10(A)	S-10(B)	S-11	S-12	S-13	S-14	S-15	S-16	S-17
Depth (ft below surface):	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	8.0-10.0'	0.0-5.0'	0.0-5.0'
Lab Sample No.:	1348021	1348022	1348023	1348024	1348025	1348026	1348031	1348032	1348033	1348034	1348041	1348042
Date Sampled:	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89	09/13/89	09/14/89	09/14/89	09/14/89	09/14/89	09/14/89	09/14/89
Laboratory:	York	York	York	York	York	York	York	York	York	York	York	York

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	2.8	1.7	3.1	3.9	1.6	3.9	24	15	5	3	6.6	59
Aroclor 1254	ND	ND	ND	0.51	ND	ND	ND	6.3	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

TOTAL PCBs (ppm):	2.8	1.7	3.1	4.41	1.6	3.9	24	21.3	5	3	6.6	59
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 25%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

NA = not available.

DRAI Job No. 86C289ORI

03-2181/7A-PCB.WE1

DR 834144

Table 6.4-8 (Cont'd)
Summary of PCBs in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.:	S-18	S-19(A)	S-19(B)	S-20	S-21
Depth (ft below surface):	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'	0.0-5.0'
Lab Sample No.:	1348043	1348044	1348045	1348046	1348047
Date Sampled:	09/14/89	09/14/89	09/14/89	09/14/89	09/14/89
Laboratory:	York	York	York	York	York

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1018	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND
Aroclor 1248	90	72	79	19	15
Aroclor 1254	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND

TOTAL PCBs (ppm):	90	72	79	19	15
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 25%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

NA = not available.

DRAI Job No. 86C289ORI

03-2161/7A-PCB.WRI

DR 834145

Table 6.4-9
Summary of Metals in Soil
AEC 7A (KO24 Post-excavation)

DRAI Sample No.: R22 R22
Depth (ft below surface): 1.5-2.0' 8.0'
Lab Sample No.: E224352 E224354
Date Sampled: 09/14/92 09/14/92
Laboratory: Accutest Accutest

Metals (ppm)			
Aluminum	11200 *	9500 *	
Antimony	0.96 JN	ND	
Arsenic	2.2 N	0.15 JN	
Barium	46.6	5.9 J	
Beryllium	0.73	0.26 J	
Cadmium	ND	ND	
Calcium	515 J	319 J	
Chromium	22.3	36.2	
Cobalt	4.1 J	ND	
Copper	25.5	14.4	
Iron	15000 *N	2590 *N	
Lead	2.5	1.7	
Magnesium	894	178 J	
Manganese	58.9	7.3	
Mercury	0.04	0.05	
Nickel	7.6	1.7 J	
Potassium	1080	ND	
Selenium	0.53 J	0.21 J	
Silver	1.5	ND	
Sodium	174 J	244 J	
Thallium	ND	ND	
Vanadium	73.9 *N	18.3 *N	
Zinc	20	3.7	

ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

N = matrix spike sample recovery not within control limits.

* = difference between sample and laboratory duplicate was > 20%.

NA = not available.

DRAI Job No. 86C289ORI

03-2101/7A-MET-WR1

DR 834146

Table 6.8-7
Summary of Volatile Organic Compounds in Soil
AEC 21B

DRAI Sample No.:	ST6	ST11	ST6
Depth (ft below surface):	4.0'	4.0'	0.5-1.0'
Lab Sample No.:	E224457	E224463	275033
Date Sampled:	09/15/92	09/15/92	3/15/88
Laboratory:	Accutest	Accutest	York

Targeted VOCs (ppm)			
Acetone	ND	ND	ND
Benzene	ND	ND	ND
Bromodichloromethane	ND	ND	ND
Bromoform	ND	ND	ND
Bromomethane	ND	ND	ND
2-Butanone	ND	ND	ND
Carbon Disulfide	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND
Chlorobenzene	ND	ND	ND
Chloroethane	ND	ND	ND
Chloroform	ND	ND	ND
Chloromethane	ND	ND	ND
Dbromochloromethane	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND
1,2-Dichloroethene (Total)	ND	ND	ND
Ethylbenzene	ND	ND	ND
2-Hexanone	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND
Methylene Chloride	ND	ND	0.04
Styrene	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND
Tetrachloroethene	ND	ND	ND
Toluene	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND
Trichloroethene	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND
Vinyl Chloride	ND	ND	ND
Xylene (Total)	ND	ND	ND
TOTAL TARGETED VOCs (ppm):	ND	ND	0.04
TOTAL NON-TARGETED VOCs (ppm):	0.02	0.04	0.01
TOTAL TARGETED AND NON-TARGETED VOCs (ppm):	0.02	0.04	0.05

See notes at end of table.

Table 6.8-8
Summary of Base Neutral Compounds in Soil
AEC 21B

DRAI Sample No.:	ST6	ST6	ST11	ST5	ST7
Depth (ft below surface):	1.5-2.0'	4.0'	4.0'	0.0-0.5'	0.0-0.5'
Lab Sample No.:	E224456	E224457	E224463	275034	275032
Date Sampled:	09/15/92	09/15/92	09/15/92	3/15/88	3/15/88
Laboratory:	Accutest	Accutest	Accutest	York	York

Targeted BNs (ppm)

Acenaphthene	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.024 J	ND	ND	ND	0.1
Benzo(a)pyrene	0.023 J	ND	ND	ND	ND
Benzo(b)fluoranthene	0.028 J	ND	ND	ND	ND
Benzo(g,h,i)perylene	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.023 J	ND	ND	ND	ND
bis(2-chloroethoxy)methane	ND	ND	ND	ND	ND
bis(2-chloroethyl)ether	ND	ND	ND	ND	ND
bis(2-ethylhexyl)phthalate	0.39 B	0.14 JB	0.18 JB	0.1	1
4-Bromophenyl-Phenylether	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND	ND
4-Chloroaniline	ND	ND	ND	ND	ND
2-Chloronaphthalene	ND	ND	ND	ND	ND
4-Chlorophenyl-Phenylether	ND	ND	ND	ND	ND
Chrysene	0.032 J	ND	ND	ND	ND
Di-n-Butylphthalate	ND	ND	ND	ND	0.1
Di-n-Octylphthalate	0.01 J	ND	ND	0.27	0.27
Dibenz(a,h)anthracene	ND	ND	ND	ND	ND
Dibenzofuran	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ND	ND	ND	ND	ND
Diethylphthalate	ND	ND	ND	ND	ND
Dimethylphthalate	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ND	ND	ND	ND	ND
Continued					

See notes at end of table.

DRAI Job No. 86C289ORI
03-2101/21B-BB.WRI

DR 834298

Table 6.8-8 (Cont'd)
Summary of Base Neutral Compounds in Soil
AEC 21B

DRAI Sample No.:	ST6	ST6	ST11	ST5	ST7
Depth (ft below surface):	1.5-2.0'	4.0'	4.0'	0.0-0.5'	0.0-0.5'
Lab Sample No.:	E224456	E224457	E224463	275034	275032
Date Sampled:	09/15/92	09/15/92	09/15/92	3/15/88	3/15/88
Laboratory:	Accutest	Accutest	Accutest	York	York

Targeted BNs (ppm)

Continued						
Fluoranthene	0.059	J	ND	ND	ND	0.22
Fluorene	ND		ND	ND	ND	ND
Hexachlorobenzene	ND		ND	ND	ND	ND
Hexachlorobutadiene	ND		ND	ND	ND	ND
Hexachlorocyclopentadiene	ND		ND	ND	ND	ND
Hexachloroethane	ND		ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND		ND	ND	ND	ND
Isophorone	ND		ND	ND	ND	ND
2-Methylnaphthalene	ND		ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ND		ND	ND	ND	ND
N-Nitrosodiphenylamine	ND		ND	ND	ND	ND
Naphthalene	ND		ND	ND	ND	0.04
2-Nitroaniline	ND		ND	ND	ND	ND
3-Nitroaniline	ND		ND	ND	ND	ND
4-Nitroaniline	ND		ND	ND	ND	ND
Nitrobenzene	ND		ND	ND	ND	ND
2,2'-Oxybis(1-Chloropropane)	ND		ND	ND	ND	ND
Phenanthrene	0.028	J	ND	ND	ND	0.16
Pyrene	0.05	J	ND	ND	ND	0.18
1,2,4-Trichlorobenzene	ND		ND	ND	ND	ND
TOTAL TARGETED BNs (ppm):	0.28		ND	ND	0.37	2.07
TOTAL NON-TARGETED BNs (ppm):	7.61		0.31	0.35	0.35	ND
TOTAL TARGETED AND NON-TARGETED BNs (ppm):	7.89		0.31	0.35	0.72	2.07

See notes at end of table.

DRAI Job No. 86C289ORI
03-2181/21B-EM.WKL

DR 834299

Table 6.8--9
Summary of Acid Extractables in Soil
AEC 21B

DRAI Sample No.:	ST6	ST6	ST11
Depth (ft below surface):	1.5-2'	4.0'	4.0'
Lab Sample No.:	E224456	E224457	E224463
Date Sampled:	09/15/92	09/15/92	09/15/92
Laboratory:	Accutest	Accutest	Accutest

Targeted AEs (ppm)

4-Chloro-3-Methylphenol	ND	ND	ND
2-Chlorophenol	ND	ND	ND
2,4-Dichlorophenol	ND	ND	ND
2,4-Dimethylphenol	ND	ND	ND
4,6-Dinitro-2-Methylphenol	ND	ND	ND
2,4-Dinitrophenol	ND	ND	ND
2-Methylphenol	ND	ND	ND
4-Methylphenol	ND	ND	ND
2-Nitrophenol	ND	ND	ND
4-Nitrophenol	ND	ND	ND
Pentachlorophenol	ND	ND	ND
Phenol	ND	ND	ND
2,4,5-Trichlorophenol	ND	ND	ND
2,4,6-Trichlorophenol	ND	ND	ND

TOTAL TARGETED AEs (ppm):	ND	ND	ND
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit. 03-2181/2118-AR.WR1

DRAI Job No. 86C289ORI

DR 834300

Table 6.8-10
Summary of PCBs in Soil
AEC 21B

DRAI Sample No.:	ST1	ST1	ST6	ST6	ST6	ST7(A)	ST7(B)	ST7	ST9	ST9	ST11
Depth (ft below surface):	0.0-0.5'	1.5-2.0'	0.0-0.5'	1.5-2.0'	4.0'	0.0-0.5'	0.0-0.5'	1.5-2.0'	0.0-0.5'	1.5-2.0'	0.0-0.5'
Lab Sample No.:	E224031	E224032	E224455	E224456	E224457	E224033	E224034	E224035	E224036	E224037	E224461
Date Sampled:	09/10/92	09/10/92	09/15/92	09/15/92	09/15/92	09/10/92	09/10/92	09/10/92	09/10/92	09/10/92	09/15/92
Laboratory:	Accutest	Accutest	Accutest	Accutest	Accutest	Accutest	Accutest	Accutest	Accutest	Accutest	Accutest

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.027 J	0.083	0.085	0.27	ND	ND	ND	ND	ND	ND	0.23
Aroclor 1254	ND	ND	0.14	0.16 JP	ND	ND	ND	ND	ND	ND	0.13
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs (ppm):	0.05	0.08	0.23	0.43	ND	ND	ND	ND	ND	ND	0.36

ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 15%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

DRAI Job No. 66C269ORI

01-2161/21B-PCB.WT1

DR 834301

Table 6.8-10 (Cont'd)
Summary of PCBs in Soil
AEC 21B

DRAI Sample No.:	ST11	ST11	ST1(A)	ST1(B)	ST1	ST2	ST3	ST4	ST5	ST6	ST7
Depth (ft below surface):	1.5-2.0'	4.0'	0.0-1.0'	0.0-1.0'	1.0-1.5'	0.0-1.0'	0.0-1.0'	0.0-1.0'	0.0-1.0'	0.0-1.0'	0.0-1.0'
Lab Sample No.:	E224462	E224463	275038	275039	275040	275037	275036	275035	275034	275033	275032
Date Sampled:	09/15/92	09/15/92	3/15/88	3/15/88	3/15/88	3/15/88	3/15/88	3/15/88	3/15/88	3/15/88	3/15/88
Laboratory:	Accutest	Accutest	York	York	York	York	York	York	York	York	York

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248	0.23 P	ND	11	11	9.8	1.1	1.7	ND	ND	0.36	ND
Aroclor 1254	0.17 JP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PCBs (ppm):	0.4	ND	11	11	9.8	1.1	1.7	ND	ND	0.36	ND

ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 15%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

DRAI Job No. 86C289ORI

03-1101/110-PCS.W11

DR 834302

Table 6.8-10 (Cont'd)
Summary of PCBs in Soil
AEC 21B

DRAI Sample No.:	ST8	ST9	ST10
Depth (ft below surface):	0.0-1.0'	0.0-1.0'	0.0-1.0'
Lab Sample No.:	275031	275030	275029
Date Sampled:	3/15/88	3/15/88	3/15/88
Laboratory:	York	York	York

Polychlorinated Biphenyls (PCBs) (ppm):

Aroclor 1016	ND	ND	ND
Aroclor 1221	ND	ND	ND
Aroclor 1232	ND	ND	ND
Aroclor 1242	ND	ND	ND
Aroclor 1248	ND	ND	ND
Aroclor 1254	ND	ND	ND
Aroclor 1260	ND	ND	ND

TOTAL PCBs (ppm):	ND	ND	ND
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ND = not detected.

J = estimated concentration detected below the contract required quality control limit.

P = the difference in concentrations between the primary and confirmation column exceeded 25%.

X = due to matrix interference, concentration is estimated based on three peaks.

C = confirmed with GC/MS.

D = Dilution of extract required to achieve calibration range.

E = estimated value due to concentration exceeding calibration range.

DRAI Job No. 86C2890RI

DJ-2101/210-PCB.WT1

DR 834303